

APPENDIX A

VISUAL ASSESSMENT

BOWMANS CREEK **WIND FARM**
Response to Additional Information Request



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Bowmans Creek Wind Farm LVIA (SSD-10315) response to DPIE request for additional information

Introduction

Thank you for your email 18th October 2021 and request to provide additional information as requested by the NSW Department Planning, Industry and Environment (DPIE) regarding the Bowmans Creek Landscape and Visual Impact Assessment.

Green Bean Design Pty Ltd (GBD) previously prepared the Bowmans Creek Wind Farm Landscape and Visual Impact Assessment (LVIA) v7, March 2021 and amended LVIA report v5 October 2021.

Additional Information for Visual Assessment:

DPIE requires additional assessment and justification of visual impacts on potentially significantly impacted non-associated dwellings and public viewpoints. Additional information relating to visual assessment requested by DPIE and responses are identified in the following table.

Table 1 – Information requested and responses

Additional information requested	Response
Project Design / Mitigation: <ul style="list-style-type: none">consider further mitigation where neighbour agreements have not been entered into including project design (and justify if an agreement has not been entered into for dwellings recommended for an agreement in the LVIA)	Refer response 1.1
<ul style="list-style-type: none">justify that the vegetation screening proposed in the EIS will be effective at dwellings given topography	
<ul style="list-style-type: none">provide a consolidated table of assessment of significance for non-associated dwellings with potentially significant visual impacts	
Confirm number of non-associated dwellings within 3 km and 4.4 km of turbines	
Night-lighting: <ul style="list-style-type: none">assess the impacts of the proposed night-lighting on all potentially impacted receivers	Refer response 3.1
Dwellings within 4.4 km:	Refer response 4.1

Table 1 – Information requested and responses

Additional information requested	Response
<ul style="list-style-type: none"> • assess four dwellings that do not appear to be included in the EIS at Davis Creek Road (2), Bowmans Creek Road (1) and Muscle Creek Road (1) 	
Excluded public viewpoints within 4.4 km: <ul style="list-style-type: none"> • assess, or justify why an assessment has not been provided, for viewpoints within 4.4 km of turbines, including public roads 	Refer response 5.1
Receivers beyond 4.4 km: <ul style="list-style-type: none"> • justify why residential receivers beyond 4.4 km have not been assessed (including consideration of Multiple Wind Turbine Effects) 	Refer response 6.1
<ul style="list-style-type: none"> • consideration of impacts on Mount Royal National Park (including Pieries Point Lookout), noting its listing as part of Gondwana Rainforest of Australia World Heritage Area 	Refer response 6.2
Consider visual impacts on Lot 40 DP 1094039	Refer response 7

DPIE request: consider further mitigation where neighbour agreements have not been entered into including project design (and justify if an agreement has not been entered into for dwellings recommended for an agreement in the LVIA)

Response 1.1

GBD prepared the LVIA for the Bowmans Creek Wind Farm Environmental Impact Statement, following a preliminary assessment as part of the project Scoping Report. During preparation of the LVIA, design amendments were made to the project resulting in the reduction of ten wind turbines to mitigate unacceptable visual impacts. The LVIA recommended a further six turbines be reviewed and removed if a neighbour agreement with affected dwellings could not be reached.

Further design amendments were made in response to submissions received during the exhibition period. GBD prepared an amended LVIA report updating the impact assessment on 15 dwellings where the potential visual impact had changed (decreased in all cases) due to the removal of an additional four wind turbines and the relocation of three wind turbines.

Table 2 provides an updated consolidated assessment of the potential visual impact on dwellings within 3km of the proposed wind turbine layout. All dwellings within 3km of a proposed turbine are considered compliant with the Bulletin, except for P22-1. Should ongoing discussions with the landowner at P22-1 not result in a Neighbour Agreement, the Proponent has committed to the removal of turbines T22 and T23. Residual impacts on the remaining non-associated dwellings within 3km can be effectively reduced using screen planting as described in Response 1.3.

DPIE request: justify that the vegetation screening proposed in the EIS will be effective at dwellings given topography

Response 1.3

Proposed vegetative screening and filtering of views is considered effective at dwellings below the black line, including views toward wind turbines located on hills and ridgelines above non-associated dwelling locations.

Screen planting has been demonstrated as an effective mitigation measure through preparation of detailed cross sections and photomontages for all non-associated dwellings below the black line where views toward wind turbines have been identified. The preparation of an analysis for each dwelling below the black line is considered important, as opposed to sampling a smaller number of locations, given the potential for variation in topography, distance to wind turbines and the proposed constructed tip height of each wind turbine.

The cross sections prepared for non associated dwellings below the black line illustrate that planting less than 10m in height, at a distance of 30m from dwellings, would screen views toward wind turbines in elevated locations. The height of effective screen planting will gradually reduce if planting can be installed closer to dwellings. In some locations effective screening height may be reduced to around 5m or below, where larger trees may be replaced by small trees or large shrubs closer to dwellings (between 10m to 15m).

Screen planting between the black and the blue line would also be considered effective given the reduced view angle toward wind turbines from distances beyond 3km of the wind turbines (i.e., if wind turbines can be screened from dwellings below the black line, then planting will also provide an effective mitigation measure to screen/filter views from dwellings between the black and blue lines).

The cross sections/photomontage for non-associated dwellings below the black line are illustrated in Figures 1 to 20 in Appendix A.

Tree and shrub planting mixes should be selected in agreement with landowners and a landscape rehabilitation specialist. A landscape rehabilitation specialist will provide advice on required tree heights, soil conditions and maintenance requirements. Planting strategies may consider mixing pioneer (faster growing) species with longer term trees to achieve earlier screening potential whilst other trees establish.

Planting mixes may include evergreen and deciduous trees as branch tracery (bare branches) will disrupt and partially screen views of wind turbines. Evergreen planting may not be suitable in every location beyond dwellings where winter shading may create issues.

Planting mixes should consider a range of plant container sizes between tube stock to semi mature 75L to 100L stock if considered appropriate.

Planting may commence prior to wind farm construction where photomontage and desk top GIS applications can provide a good indication of where views toward wind turbines may occur from dwellings. In most cases there would be no requirement to delay planting until the wind turbines have been constructed. If views toward wind turbines are identified post construction, then supplementary planting can be installed.

A plants rate of growth will be subject to several physical and environmental factors including, but not limited to plant species, soil conditions, watering, protection from livestock and maintenance.

Tables 2 and 3 outline mitigation options for non associated dwellings below the black line and non associated dwellings between the black and blue lines. Mitigation measures may also be offered to dwellings beyond the blue line in accordance with any relevant conditions accompanying a development consent.

DPIE request: provide a consolidated table of assessment of significance for non-associated dwellings with potentially significant visual impacts.

Response 1.4

Consolidated information is presented in tables 2 and 3 (summary tables presented in the original Bowmans Creek Wind Farm LVIA March 2021) with additional information to demonstrate and justify that vegetation screening proposed in the EIS will be effective at dwellings given topography.

Mitigation measures may also be offered to dwellings beyond the blue line in accordance with any relevant conditions accompanying a development consent.

Table 2 Performance objectives, mitigation summary and visual significance (dwelling within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
F17-1	2	3	2.84km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>One turbine within 3km (T60) has been removed.</p> <p>Additional spot planting recommended.</p> <p>Neighbour Agreement has been offered.</p> <p>Residual impacts</p> <p>Existing trees surrounding and beyond dwelling F17-1 will provide some degree of screening and filtering of views toward turbines within the west and north west portion of the project. Additional spot planting beyond the dwelling would assist in screening/filtering views toward turbines in the south west portion of the project.</p> <p>Visual significance</p> <p>The wind farm would not result in a significant visual impact at dwelling F17-1.</p>
F18-1	2	6	2.58km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance	<p>Proposed mitigation</p> <p>One turbine within 3km (T65) was removed.</p> <p>Screen planting recommended.</p>

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
								objectives as applicable to a VIZ2 view location.	<p>Neighbour Agreement has been offered.</p> <p>Residual impacts</p> <p>There is limited tree planting around the dwelling to screen views toward turbines which would be visually prominent on an elevated ridgeline east of the dwelling. A cross section analysis has determined that screen planting between 6m and 7m in height at 30m from the dwelling would provide effective screening toward wind turbines.</p> <p>Visual significance</p> <p>Without screening, the turbines would have potential to result in a significant visual impact at dwelling F18-1. With screening the wind turbines would not have a significant visual impact at dwelling F18-1.</p>
F19-1	2	3	2.63km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>One turbine within 3km (T65) was removed.</p> <p>Screen planting recommended.</p> <p>Neighbour Agreement has been offered.</p> <p>Residual impacts</p>

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
									<p>The photomontage prepared for dwelling F19-1 illustrates direct and open views toward turbines on an elevated ridgeline east of dwelling F19-1. A cross section analysis has determined that screen planting between 7m and 8m in height at 30m from the dwelling would provide screening toward wind turbines.</p> <p>Visual significance</p> <p>Without screening the turbines would have potential to result in a significant visual impact as dwelling F19-1. With screening the wind turbines would not have a significant visual impact at dwelling F19-1.</p>
G15-3	2	3	2.93km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location. Existing tree screening beyond the dwelling will restrict views toward wind turbines.	<p>Proposed mitigation</p> <p>Three turbines within 2km (T60, T61 and T62) were removed.</p> <p>Neighbour Agreement has been offered.</p> <p>Residual impacts</p> <p>Views toward wind turbines are largely screened by extensive tree cover beyond dwelling G15-3. Existing semi</p>

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
									<p>mature eucalypt trees screen significant views toward wind turbines. Screen planting is not considered necessary but would be made available if requested. A cross section analysis has determined that screen planting around 7m in height at 30m from the dwelling would provide screening toward wind turbines.</p> <p>Visual significance</p> <p>The wind farm would not result in a significant visual impact at dwelling G15-3.</p>
G17-1	2	7	2.04km	Y	Y	Y	Y	<p>The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location. Tree screening beyond the dwelling will restrict views toward some wind turbines.</p>	<p>Proposed mitigation</p> <p>Three turbines within 3km (T65, T61 and T62) were removed.</p> <p>Screen planting recommended.</p> <p>Neighbour Agreement has been offered.</p> <p>Residual impacts</p> <p>Photomontage prepared from dwelling G17-1 illustrates direct and open views toward 4 turbines on an elevated ridgeline east of dwelling G17-1. Existing mature eucalypt</p>

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
									<p>trees beyond the dwelling screen/filter views toward other turbines on the ridgeline. A cross section analysis has determined that screen planting between 7m to 8m in height at 30m from the dwelling would provide screening toward wind turbines.</p> <p>Visual significance</p> <p>Without screening, the turbines would have potential to result in a significant visual impact at dwelling G17-1. With screening the wind turbines would not have a significant visual impact at dwelling G17-1.</p>
H12-1	2	0	3.02km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Five turbines (T62, T56, T55, T53, T54) within 3km have been removed</p> <p>Neighbour Agreement has been offered.</p> <p>Screen planting in accordance with the Bulletin.</p> <p>Residual impacts</p>

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
									Views from the dwelling would extend toward a small number of wind turbines within the north west portion of the project site. Visual significance Without screening, the wind turbines would not result in a significant visual impact at dwelling H12-1.
H12-3 (H11-1 and H12-2)	2	2	2.57km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Four turbines (T56, T55, T53, T54) within 3km have been removed. Neighbour Agreement has been offered. Screen planting in accordance with the Bulletin. Residual impacts Views from the dwellings would extend toward a small number of turbines within the north west portion of the project site. A cross section analysis has determined that screen planting 4m in height at 30m from the dwelling would provide screening toward wind turbines. Visual significance

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
									Without screening, the wind turbines would not result in a significant visual impact at dwelling H12-3, H12-2 and H11-1.
P22-1	1	4	1.38km	N	Y	Y	Y	The wind farm is compliant with all performance objectives except visual magnitude. Tree cover provides substantial screening to the west of the immediate dwelling curtilage, with tree cover also providing some partial filtering of views toward wind turbines south of the dwelling.	<p>Proposed mitigation</p> <p>Neighbour Agreement has been offered.</p> <p>Screen planting is recommended.</p> <p>Residual impacts</p> <p>The project is compliant with the Bulletin visual performance objectives for the VIZ 1 dwelling except visual magnitude.</p> <p>Photomontages prepared from dwellings P22-1 and P22-4 (within the same property) illustrate a combination of landform and tree cover that provides some degree of screening/filtering of views toward 4 wind turbines below the black line. There is a greater degree of tree screening/filtering toward wind turbines 24 and 25. No other wind turbines would be visible below the blue line. A cross section analysis has determined that screen planting</p>

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
									<p>at 10m in height at 30m from the dwelling would provide screening toward wind turbines.</p> <p>Visual significance</p> <p>The project does not conform to the Bulletin magnitude performance objective, and without a neighbour agreement the removal of turbines 22 and 23 will mitigate visual impact in accordance with the Bulletin performance objectives (refer photomontages P22-1 and P22-4).</p>
Q17-5	2	1	2.85km	Y	Y	Y	Y	The project is considered compliant with the Bulletin visual performance objectives for the VIZ 2 dwelling. Residual impacts will be managed as far as practicable through screen planting in accordance with relevant consent conditions.	<p>Proposed mitigation</p> <p>Screen planting in accordance with the Bulletin.</p> <p>Residual impacts</p> <p>Views from the dwelling would extend toward a small number of turbines to the north west and south east of the dwelling. A cross section analysis has determined that screen planting 7m in height at 30m from the dwelling would provide screening toward wind turbines north west of the dwelling and that screen planting 5m in height 30m</p>

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
									<p>from the dwelling would provide screening toward wind turbines south east of the dwelling.</p> <p>Visual significance</p> <p>Without screening the wind farm would not have a significant visual impact at dwelling Q17-5.</p>
S17-2	2	4	2.04km	Y	Y	Y	Y	<p>The wind farm is considered compliant with the Bulletin given the location and extent of tree cover beyond the dwelling. Tree cover provides substantial screening to the west of the immediate dwelling curtilage, with tree cover also providing some partial filtering of views toward wind turbines south of the dwelling.</p>	<p>Proposed mitigation</p> <p>Five turbines (T2, T3, T11, T10, T9) within 3km have been removed</p> <p>Neighbour Agreement has been offered.</p> <p>Screen planting in accordance with the Bulletin</p> <p>Residual impacts</p> <p>The project is compliant with the Bulletin visual performance objectives for the VIZ 2 dwelling. Visual impacts have been managed through the removal of wind turbine T10 and relocation of turbines T8 and T9. Residual impacts including a view toward turbine T8 will be managed as far as practicable through screen planting in accordance with the Bulletin. A cross section analysis has determined</p>

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
									that screen planting around 7m in height at 30m from the dwelling would provide screening toward T8. Visual significance Without screening, the wind turbines would not result in a significant visual impact at dwelling S17-2.
T5-1	2	1	2.95km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Neighbour Agreement has been offered. Screen planting in accordance with the Bulletin Residual impacts The photomontage prepared for dwelling T5-1 illustrates some partial filtering of views toward turbines through existing (deciduous) tree planting beyond farm structures. Tree spot planting between the farm sheds and the dwelling would provide some degree of screening toward the turbines. A cross section analysis has determined that screen planting around 7m in height at 30m from the dwelling would provide screening toward wind turbines. Visual significance

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
									Without screening, the wind turbines would not have a significant visual impact at dwelling T5-1.
T6-2	2	2	2.58km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Neighbour Agreement has been offered.</p> <p>Screen planting in accordance with the Bulletin</p> <p>Residual impacts</p> <p>The photomontage prepared for dwelling T6-2 illustrates that a clustered group of turbines would be visible above an existing shed. Spot planting of trees between the farm shed and the dwelling would provide some degree of screening toward the turbines over time. However, tree planting may result in shading of solar panels on the shed, or upon the vegetable garden between the shed and dwelling. A cross section analysis has determined that screen planting around 9m in height at 30m from the dwelling would provide screening toward wind turbines.</p> <p>Visual significance</p>

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
									Without screening, the wind turbines would not result in a significant visual impact at dwelling T6-2.
T6-9	2	2	2.26km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Neighbour Agreement has been offered.</p> <p>Screen planting in accordance with the Bulletin</p> <p>Residual impacts</p> <p>The photomontage prepared for dwelling T6-9 illustrates views toward a small, clustered group of turbines within the northern portion of the project site. Tree spot planting beyond the dwelling would provide some degree of screening toward the turbines. A cross section analysis has determined that screen planting between 6m and 10m in height at 30m from the dwelling would provide screening toward wind turbines.</p> <p>Visual significance</p> <p>Without screening, the turbines would not result in a significant visual impact at dwelling T6-9.</p>

Table 2 Performance objectives, mitigation summary and visual significance (dwellings within 3km of a wind turbine)

Dwelling ID	VIZ	Theoretical number of visible turbines below black line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation, residual impacts and visual significance
				Ma	L	F	Mu		
V20-1	2	5	2.25km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Screen planting in accordance with the Bulletin</p> <p>Residual impacts</p> <p>Landform and tree cover beyond the dwelling will screen views toward most wind turbines from the dwelling and from various locations from the dwelling curtilage. A cross section analysis has determined that screen planting around 9m in height at 30m from the dwelling would provide screening toward wind turbines.</p> <p>Visual significance</p> <p>Without screening, the turbines would not result in a significant visual impact at dwelling V20-1.</p>

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
D18-3 (D18-2 and E18-1)	2	3	4.17km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Residual impacts The photomontage prepared for dwelling D18-1, within the general vicinity of dwellings D18-3, D18-2 and E18-1, illustrates that planting beyond dwellings is likely to have potential to provide screening toward wind turbines. Additional tree planting to the dwelling/s curtilage would provide screening toward the wind turbines. Visual significance The wind farm would not have a significant impact on views from these dwellings.
D21-2	2	1	4.31km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Residual impacts

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
								applicable to a VIZ2 view location.	<p>The photomontage prepared from dwelling D21-2 illustrates that additional tree planting and/or shrub planting would screen views toward the wind turbines.</p> <p>Visual significance</p> <p>The wind farm would not have a significant impact on views from this dwelling.</p>
E17-7 (E17-1, E17-2, E17-3, and E17-5)	2	6	4.02km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin.</p> <p>Residual impacts</p> <p>Photomontage from dwellings E17-1 and E17-2 illustrate that existing landform and tree will substantively screen views toward wind turbines. The photomontage from dwelling E17-3 illustrates existing trees would have potential to provide screening toward the wind turbines. Views from dwelling E17-5 (around 110m south and 5m</p>

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
									<p>above dwelling E17-3) and E17-7 would also have the potential to be screened by planting.</p> <p>Visual significance</p> <p>The wind farm would not have a significant impact on views from these dwellings.</p>
E17-4	2	3	4.27km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin.</p> <p>Residual impacts</p> <p>Dwelling E17-4 is located around 185m south west and around 5m below dwelling E17-1. At a similar distance and elevation as dwelling E7-1, tree planting would provide screening toward wind turbines.</p> <p>Visual significance</p> <p>The wind farm would not have a significant impact on views from these dwellings.</p>

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
E17-6	2	1	4.33km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin.</p> <p>Residual impacts</p> <p>Additional tree planting to the dwelling curtilage would provide screening toward the wind turbines as demonstrated in the photomontage prepared at similar distances for dwelling E17-3 and E17-2.</p> <p>Visual significance</p> <p>The wind farm would not have a significant impact on views from this dwelling.</p>
E19-1	2	6	3.12km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin.</p> <p>Residual impacts</p>

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
									<p>The photomontage from dwelling E19-1 illustrates that tree planting would have potential to provide screening toward the turbines located on ridgelines beyond the dwelling.</p> <p>Visual significance</p> <p>The wind farm would not have a significant impact on views from dwelling E19-1.</p>
F16-1	2	10	3.41km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Two wind turbines have been removed which results in no wind turbines below the black line from dwelling F16-1. Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin.</p> <p>Residual impacts</p> <p>The photomontage prepared from dwelling F16-1 illustrates existing tree cover beyond the dwelling filtering and partially screening views toward some wind turbines as well as the potential for additional screening to be implemented to screen views toward closer turbines. Tree planting would</p>

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
									be constrained by an existing domestic power line and a small number of turbines would be visible beyond the power line pole. Visual significance The wind farm would not result in a significant visual impact at dwelling F16-1.
F16-2	2	4	3.82km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin.
G12-1 (G11-1)	2	0	4.08km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Residual impacts

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
									<p>The photomontage prepared from dwelling G12-1 illustrates that wind turbines would be largely screened by landform and tree cover beyond the dwelling.</p> <p>Visual significance</p> <p>The wind farm would not have a significant impact on views from these dwellings.</p>
H8-1	2	1	4.03km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin.</p> <p>Visual significance</p> <p>The wind farm would not have a significant impact on views from this dwelling.</p>
H11-2	2	6	3.26km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	<p>Proposed mitigation</p> <p>Four wind turbines have been removed which results in no wind turbines below the black line from dwelling H11-2.</p> <p>Neighbour Agreement has been offered.</p> <p>Screen planting in accordance with the Bulletin</p>

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
									Residual impacts The photomontage prepared from dwelling H11-2 illustrates that potential tree planting alongside the access road to the dwelling has the potential to screen or filter views toward turbines. Visual significance The wind farm would not have a significant impact on views from this dwelling.
K23-1	2	0	4.35km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Residual impacts The photomontage prepared from dwelling K23-1 illustrates that wind turbines would be largely screened by landform and tree cover beyond the dwelling. Visual significance

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
									The wind farm would not have a significant impact on views from this dwelling.
N21-1 (and N21-2)	2	3	3.52km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Residual impacts Wind turbines would be largely screened by landform and tree cover beyond the dwelling. Visual significance The wind farm would not have a significant impact on views from this dwelling.
N22-1	2	4	4.10km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Residual impacts

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
									<p>The majority of wind turbines within the project site would be screened by landform and tree cover beyond the dwelling.</p> <p>Visual significance</p> <p>The wind farm would not have a significant impact on views from this dwelling.</p>
O22-1 (and associated dwelling)	2	3	3.12km	Y	Y	Y	N	<p>The project is not compliant with the Bulletin visual performance objectives for the VIZ 2 dwelling with wind turbines in 3no. 60 degree sectors. However, given distance the wind turbines within one of the 3 60-degree sectors (exceeding 5km) they are not considered</p>	<p>Proposed mitigation</p> <p>Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin.</p> <p>Residual impacts</p> <p>Photomontages prepared for dwellings O22-1 illustrate the largely majority of turbines are screened by landform and existing tree cover.</p> <p>Visual significance</p> <p>Without screening, the wind farm will not have a significant impact on these dwellings.</p>

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
								to dominate the available viewshed. The wind turbines do not impart a vertical dominance over the dwelling or surrounding curtilage. Residual impacts will be managed as far as practicable through screen planting in accordance with the Bulletin.	
P7-1	2	5	3.52km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Visual significance The wind farm would not have a significant impact on views from this dwelling.

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
Q5-1	2	0	4.11km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation If turbines are visible, screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Visual significance The wind farm would not have a significant impact on views from this dwelling.
Q17-3 (Q17-1 and Q17-2)	2	15	3.13km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Residual impacts Additional tree planting to the dwelling curtilages would provide screening toward the wind turbines. Visual significance The wind farm would not have a significant impact on views from these dwellings.

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
S4-1	2	3	3.51km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Residual impacts Additional tree planting to the dwelling curtilage would provide screening toward the wind turbines. Visual significance The wind farm would not have a significant impact on views from this dwelling.
T15-1	2	4	3.34km	Y	Y	Y	Y	The wind farm is considered compliant with the Bulletin given the marginal visibility of wind turbines to the west of the dwelling occupying the third 60 degree sector.	Proposed mitigation Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Residual impacts Additional tree planting to the dwelling curtilage would provide screening toward the wind turbines. Visual significance

Table 3 Performance objectives summary (dwellings between 3km and 4.4km of a wind turbine)

Dwelling ID	VIZ	Number of visible turbines between black line and blue line	Distance to nearest turbine	Performance objective met Yes (Y) or No (N)				Performance objective notes	Proposed mitigation and residual impacts
				Ma	L	F	Mu		
									The wind farm would not have a significant impact on views from this dwelling.
W8-1	2	6	3.31km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation If turbines are visible, screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Visual significance The wind farm would not have a significant impact on views from this dwelling.
W22-1	2	1	4.30km	Y	Y	Y	Y	The wind farm is compliant with the Bulletin performance objectives as applicable to a VIZ2 view location.	Proposed mitigation If turbines are visible, screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin. Visual significance The wind farm would not have a significant impact on views from this dwelling.

DPIE request: Confirm number of non-associated dwellings within 3 km and 4.4 km of turbines;

Response 2.1

Landholder Category	No. Landholders < 3km	No. Landholders 3 km – 4.4 km	Total
Neighbour Landholders	14	-	14
Non-Associated Landholders	-	30	33
TOTAL	14 (17 Dwellings)	30 (36 Dwellings)	44 (53 Dwellings)

DPIE request: Night-lighting: assess the impacts of the proposed night-lighting on all potentially impacted receivers;

Response 3.1

Visual Bulletin Performance Objectives

The Performance Objectives (applicable to all visual influence zones) states that:

- *Aviation hazard lighting (AHL) must meet the requirements of the Australian Standard AS 4282 – 1997 and any prescribed or notified requirement.*
- *Shield all AHL within 2km from any dwellings and*
- *Avoid strobe lighting.*

The Bulletin notes that ‘the CASA guidelines recommend that to minimise visual impacts “obstacle lights may be partially shielded, provided it does not compromise their operational effectiveness. Where obstacle lighting is provided, lights should operate at night, and at times of reduced visibility. All obstacle lights on a wind farm should be turned on simultaneously and off simultaneously.

GBD notes the Australian Standard AS 4282 – 1997 states that the Standard does not apply to lighting systems which are of a cyclic or flashing nature (AS 4282 – 1997 Section 1 Scope and General, 1.1 Scope (e).

GBD also notes that the Australian Standard AS4282 – 1997 has been revised and is now designated as AS/NZS 4282:2019. Having reviewed AS4282:2019 GBD notes that the revised Standard does not apply to the performance objectives which states ‘Lighting for aviation safety does not fall within the scope of this Standard’ (AS4282:2019 page 5).

There are 2 dwellings within 2km of wind turbines. The Proponent will seek neighbour agreements for all dwellings within 2km of a wind turbines. Where a neighbour agreement is not accepted, visible wind turbines within 2km of a dwelling will be removed or relocated to beyond 2km of the dwelling.

GBD understand that strobe lighting is not proposed to be installed on the wind turbines or within the project site.

Potential visual impacts associated with obstacle marking and lighting at night time have not been extensively researched or tested in New South Wales, although some site investigations have been carried out at existing wind farms in Victoria. Investigations have generally concluded that although night time lighting mounted on wind turbines could be visible for a number of kilometres from the wind farm project area, the actual intensity of the lighting appears no greater than other sources of night time lighting, including vehicle head and tail lights.

Previous investigations have also suggested that replacing the more conventional incandescent lights with light emitting diodes (LED) could help to minimise the potential visual impact of the wind turbine lights (Epuron 2008).

Existing light sources

A number of existing night time light sources occur beyond the project site viewshed, and include residential and general lighting associated with surrounding large scale industrial development and mining activities. This includes areas of mining and coal processing facilities, power stations and transport corridors. Residential and street lighting also extends across the Muswellbrook urban and commercial areas.

Localised lighting is associated with rural dwellings located within 4.4km of the wind turbines, but lighting is unlikely to be visually prominent and does not emit any significant illumination beyond immediate areas surrounding residential and agricultural buildings.

Lights from vehicles travelling along the local roads and highways provide dynamic and temporary sources of light.

Potential light sources

The main potential light sources associated with the wind farm would include:

- low intensity night lights for substations, control and auxiliary buildings and
- night time obstacle lights mounted on some wind turbines.

In accordance with the withdrawn CASA Advisory Circular two red medium intensity obstacle lights are required on specified turbines at a distance not exceeding 900 m and all lights were to flash synchronously. To minimise visual impact some shielding of the obstacle lights below the horizontal plane was permitted. Lighting for aviation safety could also be required prior to and during the construction period, including lighting for large equipment such as cranes.

In addition to the standard level of lighting required for normal security and safety, lighting could also be required for scheduled or emergency maintenance around the control building, substation and wind turbine areas.

As the visibility of the substation and control room would be largely contained by the surrounding landform, it is unlikely that light spill from these sources would be visible from the majority of surrounding receiver locations including surrounding dwellings.

Potential receiver locations and impact

The categories of potential receiver locations that could be impacted by night time lighting generally include residents and motorists.

Night time lighting associated with the wind farm is unlikely to have a significant visual impact on the majority of public receiver locations. Whilst obstacle lighting would be visible to motorists travelling along the local roads, the duration of visibility would tend to be very short and partially screened by undulating landform along some sections of local road corridors and influenced by the direction of travel.

Night time obstacle lighting associated with the wind farm would be visible from a number of the residential receiver locations surrounding the wind farm; however, topography and screening by vegetation and screen planting around residential dwellings would screen or partially obscure views toward night time obstacle lighting.

Irrespective of the total number of visible lights, obstacle lighting is more likely to be noticeable from exterior areas surrounding dwellings rather than from rooms within dwellings, where internal lighting tends to reflect and mirror views in windows, or where exterior views would be obscured when curtains and blinds are closed.

Mitigation measures including screen planting outlined in Response 1.3 would also provide screening and filtering of views toward night time obstacle lighting from dwellings.

Night lighting recommendations

Aviation Hazard Lighting

To assist in the mitigation of aviation hazards lighting the following should be applied:

Aviation hazard lighting should be installed across the wind farm site, particularly along the project boundary in accordance with advice provided by an aviation consultant.

Aviation hazard lighting is not required on every wind turbine. In accordance with CASA requirements, shielding may be provided to restrict downward light spill to the ground plane by ensuring that no more than 5% of the nominal light intensity be emitted at or below 5° below horizontal. No light should be emitted at or below 10° in the horizontal plane.

Where two lights are mounted on a nacelle, dynamic shielding or light extinction for the period that a blade is passing in front of the light is permissible providing that at all times at least one light can be seen, without interruption, from every angle in azimuth.

Surface treatment to the rear of wind turbine blades with a non-reflective coating may reduce reflection from wind turbine blades at night.

CASA aviation hazard lighting requirements should be monitored by wind farm operators and shielding or lower intensity lighting should be implemented to reduce illumination as much as possible as approved by CASA.

Ancillary structures

To assist in the mitigation of night lighting associated with ancillary structures the following should be applied:

- Security lighting throughout the wind farm, switching station and the substation should be minimised to decrease the contrast between the wind farm and the surrounding night time environment.
- Motion detectors should be used to activate night time security lighting when required.
- Ancillary lighting is to be designed to ensure it does not spill onto nearby roads or dwellings.

It is also noted that screen planting, where proposed as a visual mitigation measure, would also screen views toward wind turbines with obstacle lighting.

DPIE request: Dwellings within 4.4 km: assess four dwellings that do not appear to be included in the EIS at Davis Creek Road (2), Bowmans Creek Road (1) and Muscle Creek Road (1);

Response 4.1

One additional house has been included in the visual impact assessment report, identified as E17-7. An assessment was conducted at E17-3 and used as a representative location for a cluster of dwellings in accordance with the Visual Bulletin. The assessment at E17-3 is considered suitable as a representative location due to the close proximity.

The remaining dwellings identified by DPIE are associated dwellings.

DPIE request: Excluded public viewpoints within 4.4 km: assess, or justify why an assessment has not been provided, for viewpoints within 4.4 km of turbines, including public roads;

Response 5.1

GBD confirm that within 4.4km of the wind turbines there are no:

- Recreation, cultural or scenic sites of National, State or regional significance
- Interstate and state passenger rail lines with daily daylight services
- State Highways, freeways and classified main roads, classified tourist roads
- Land management roads

- Walking tracks of moderate local significance or infrequent recreation usage
- Navigable waterways
- Community Halls and showgrounds and
- Sports facilities, playgrounds, skateparks or dog parks.

There are a small number of low use travel routes around the site largely providing access to rural dwellings. These include Sandy Creek Road (McCullys Gap), Muscle Creek Road (Muscle Creek) and Scrumlo Road extending north of Hebden. All three roads are no through roads terminating at rural dwellings. A small number of unsealed access roads provide vehicular routes to rural dwellings and properties.

In accordance with the Visual Bulletin, Sandy Creek Road, Muscle Creek Road and Scrumlo Road are classified as Viewer Sensitivity Level 3 Viewpoints. Located within a Moderate Scenic Quality Class and beyond 2km of the wind turbines, these roads are Visual Influence Zone 3 (VIZ3).

In accordance with the Visual Bulletin Performance Objectives, we note the following:

Visual Magnitude, VIZ3 performance objective: consider screening below the black line. These roads are located beyond the black line.

Landscape Scenic Integrity, VIZ3 performance objective: No visual performance objective applies.

Key Feature Disruption, VIZ3 performance objective: No visual performance objective applies.

Multiple Wind Turbine Effects, VIZ3 performance objective – only applicable to Level 1 and Level 2 viewpoints.

Shadow Flicker and Blade Glint, VIZ3 performance objective – blades will be finished with low reflective surface treatment to minimise blade glint. Shadow Flicker objectives for 30 hours per year applicable to dwelling locations only, no minimum hours per year stated for viewpoints from roads.

Aviation Hazard Lighting, VIZ3 performance objective. No objectives are noted to address views toward aviation hazard lighting from roads.

Short sections of two low use /low concern travel routes along Bowmans Creek Road and Albano Road are located between 500m and 1km of wind turbines. In accordance with the Visual Bulletin Bowmans Creek Road and Albano Road are classified as Viewer Sensitivity Level 3 Viewpoints. Located within a Moderate Scenic Quality Class and between 500m and 2km of the wind turbines, these roads are Visual Influence Zone 2 (VIZ2).

In accordance with the Visual Bulletin Performance Objectives, we note the following:

Visual Magnitude, VIZ2 performance objective: *manage impacts as far as practicable, justify residual impacts and describe mitigation measures below the black line.*

Visual impacts from the Bowmans Creek Road and Albano Road corridor will be managed as far as practicable; however, tree screening along the road corridor is not considered practicable given safety issues and

potentially blocking distant and extensive desirable views where not blocked by landform. A very low-level usage was observed during site inspections with potential visual exposure to wind turbines limited to a short duration whilst travelling along the road corridors.

Landscape Scenic Integrity, VIZ2 performance objective: *Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could become a major visual element in the landscape but should not dominate the existing visual catchment.*

The wind turbines will not create a significant modification of the visual catchment as available from the road corridors which will be influenced by the direction of travel as well as the influence of undulating landform beyond the road corridor.

Key Feature Disruption, VIZ2 performance objective: *Minimise impact of wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points.*

The visual impact of wind turbines and ancillary features from road corridors would be minimised by the changing nature of views toward key landscape features or views along road corridors. Ancillary infrastructure would not be visible from the road corridors.

Multiple Wind Turbine Effects, VIZ2 performance objective: *Avoid views toward proposed, existing and approved turbines within eight kilometres from level 2 viewpoints within the effective horizontal views in three or more 60 degree sectors.*

The road corridors incorporate multiple and changing viewpoints from vehicles travelling along the roads which do not constitute individual viewpoints or key public viewpoints. There are no designated, signposted or formal lookout locations along the road corridors within 2km of the wind turbines. Views from the roads are influenced by undulating landform extending beyond the road corridors and therefore the visible extent of wind turbines is subject to change over relatively short distances. Whilst it is unlikely that wind turbines would be visible in three or more 60 degree sectors from vehicles travelling along the Albano Road and Bowmans Creek Road, it is likely that any points along the road corridors where turbines would be visible in three or more 60 degree sectors would be limited and temporary in nature.

Shadow Flicker and Blade Glint, VIZ2 performance objective – blades will be finished with low reflective surface treatment to minimise blade glint. Shadow Flicker objectives for 30 hours per year applicable to dwelling locations only, no minimum hours per year are stated for viewpoints from roads.

Aviation Hazard Lighting, VIZ2 performance objective. No objectives are noted to address views toward aviation hazard lighting from roads.

DPIE request: Receivers beyond 4.4 km:

justify why residential receivers beyond 4.4 km have not been assessed (including consideration of Multiple Wind Turbine Effects);

Response 6.1

The Bowmans Creek Wind Farm EIS LVIA, March 2021 included the assessment of dwellings beyond 4.4km. A number of representative view locations were selected in proximity to dwellings. These included:

View location 1: Hebden/Scrumlo Road

View location 3: South Muswellbrook

View location 4: Muswellbrook Ruth White Avenue

View location 7: Greenlands

View location 8: Woodlands Ridge

View location 9: McCullys Gap

View location 10: Mount Royal South

View location 11: Muswellbrook Brook Street

View location 12: McCullys Gap Road (Dolahentys Road)

View location 13: Rouchel Brook

View location 15: Upper Rouchel

View location 16: Rouchel

Multiple Wind Turbine Tool Diagrams have been provided for each of the above view locations in the EIS LVIA.

DPIE request: consideration of impacts on Mount Royal National Park (including Pieries Point Lookout), noting its listing as part of Gondwana Rainforest of Australia World Heritage Area;

Response 6.2

The Mount Royal National Park (Pieries Point Lookout) was included in the Bowmans Creek Wind Farm EIS LVIA, March 2021 in accordance with the Visual Bulletin. Refer EIS LVIA View location 5: Mount Royal National Park (Pieris Point Lookout) Sections 9.9.13, 9.9.14, 9.9.15 Multiple Eind Turbine Tool Diagram and Table 9-48.

The Mount Royal National Park (noted as part of the Gondwana Rainforest of Australia World Heritage Area) is densely forested over much of the park area and as such views from facilities within the park (including the Youngville campground, picnic area and bbq facilities) are screened by trees.

DPIE request: consideration of visual impacts on Lot 40 DP 1094039**Response 7**

Lot 40 DP 1094039 (the Lot) is located to the west of the project site off Muscle Creek Road. The Lot is approximately 49.55 hectares in area with Middle Creek to the north and pasture with scattered trees to the east, west and south. The Lot is gently undulating rising west to east from around 234m AHD to around 260m AHD then falling to around 250m AHD. Land use within the Lot is largely pasture with a small number of scattered mature trees within the eastern portion of the Lot. An agricultural shed is located in the west portion of the Lot with a demolished dwelling site located toward the central portion of the Lot.

The extent of the Lot is illustrated in Figure 1 with the shed in the western portion of the Lot and the demolished house location identified together with the black line at 3km from the wind turbines (not shown) to the north east to south east of the Lot.

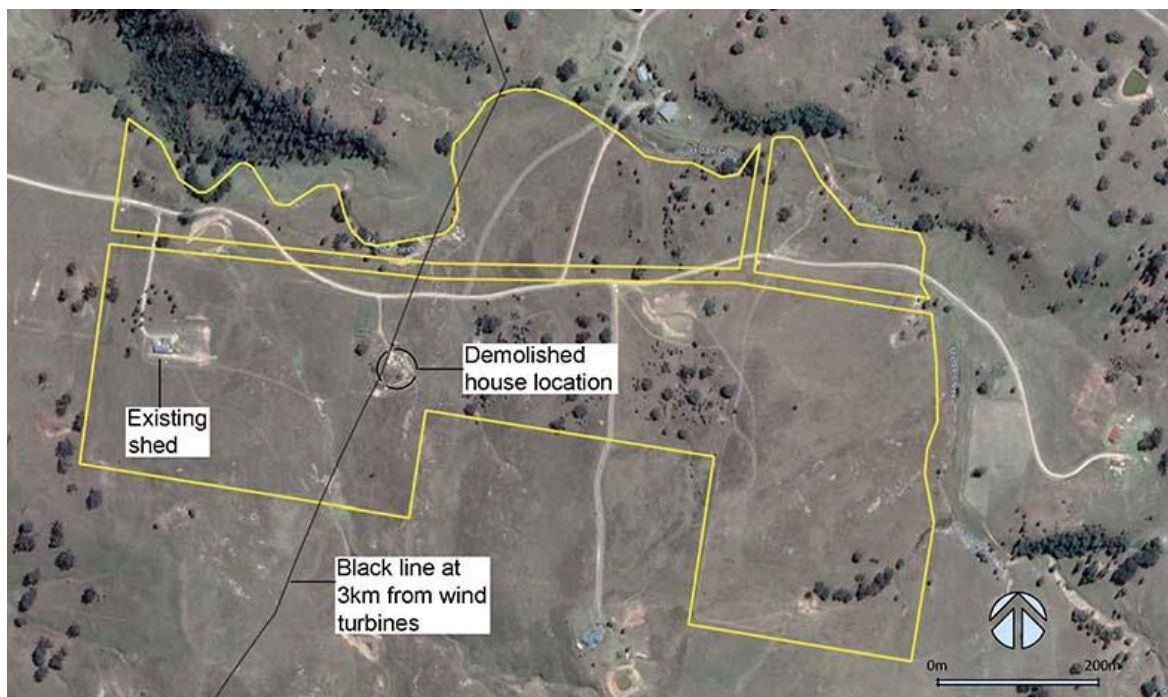


Figure 1 Lot 40 DP 1094039

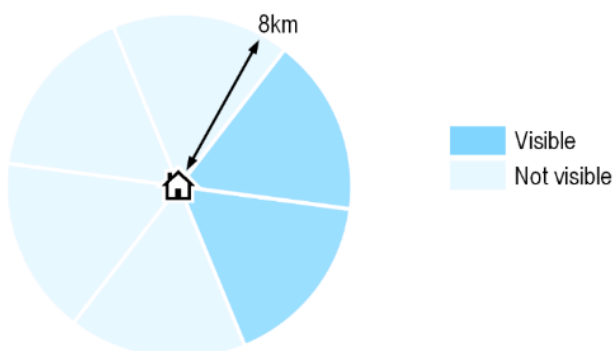


Figure 2 Viewpoint Lot 40 DP 1094039 Visibility rose

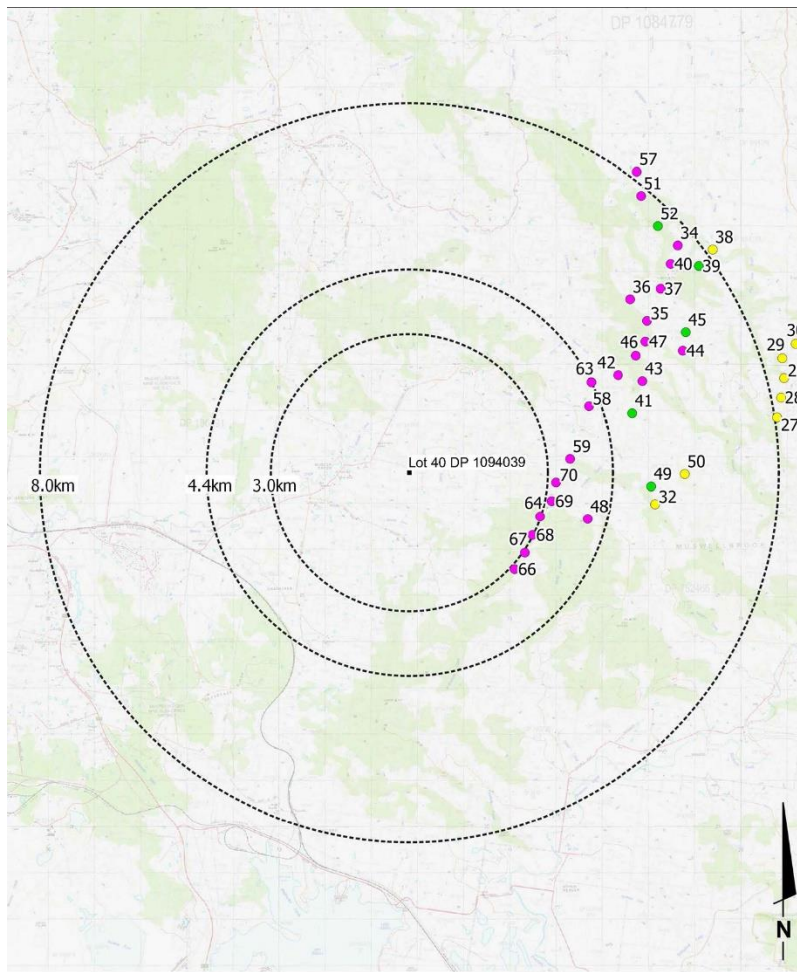


Figure 3 Lot 40 DP 1094039 Multiple Wind Turbine Tool diagram

Figure 2 illustrates wind turbines would be visible within 2 60-degree sectors as modelled from the site of the former dwelling. The wind turbine configuration and distance to wind turbines would also result in views being confined to 2-60 degree sectors if any future dwelling was to be located to the east of the former dwelling site or in any other portion of the Lot. This is also confirmed by dwelling G17-1 located to the east of the Lot which has wind turbine visibility limited to 2 60-degree sectors.

Figure 3 illustrates a Multiple Wind Turbine Tool diagram as modelled from the site of the former dwelling.

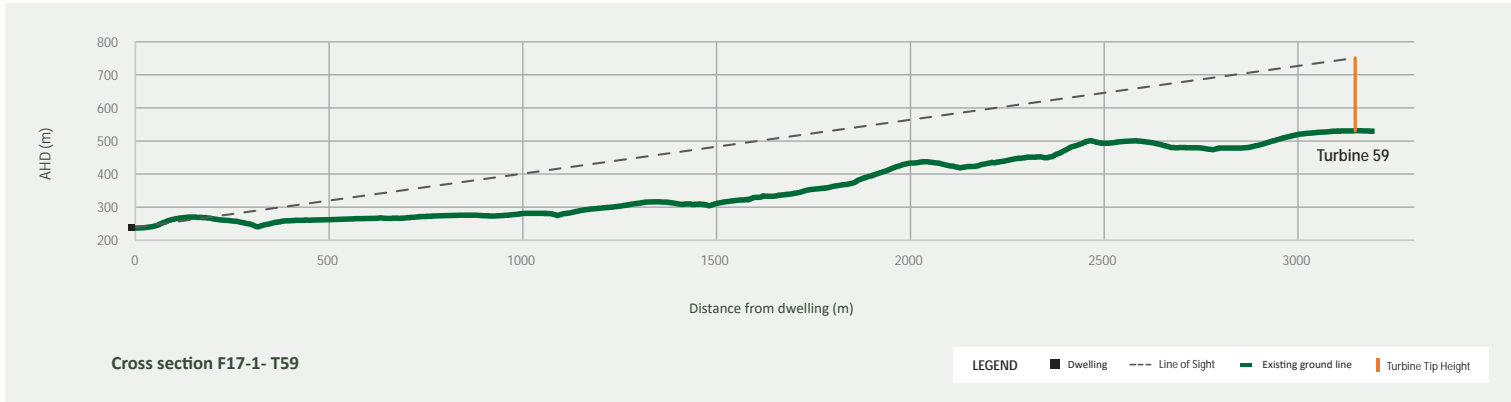
Any dwelling, if approved, could be located to the west of, and beyond the black line and be orientated to capture main views to the north and west away from most wind turbines. As such the potential visual impact could be mitigated and is not considered significant. Recommended conditions of consent, including the provision of landscape mitigation would further reduce the significance of visual impacts should a dwelling be built in the future.

Appendix A – Mitigation analysis figures

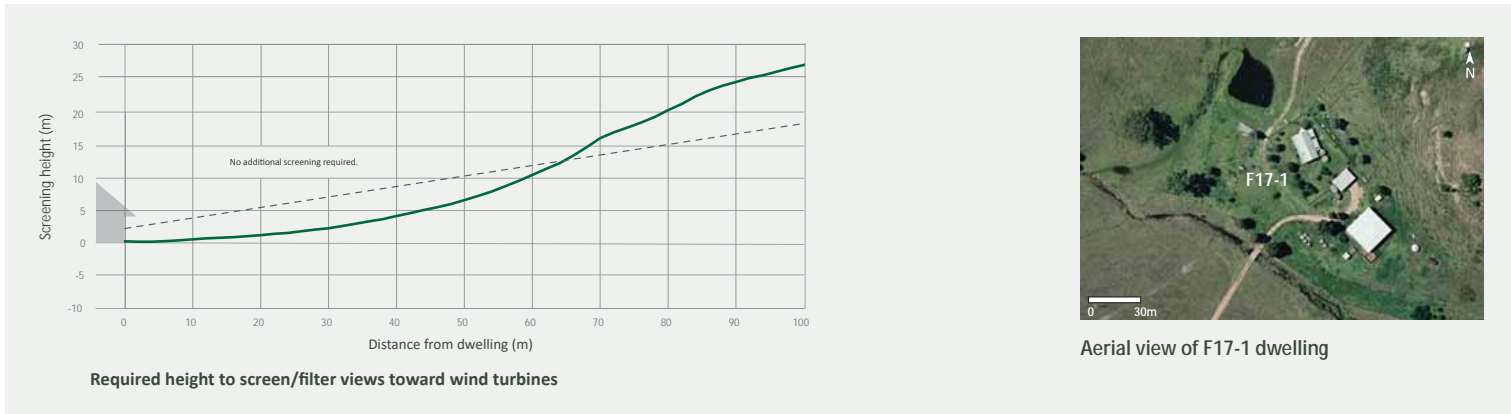
Bowmans Creek Wind Farm - additional information



Photomontage view from F17-1 Dwelling: Approximate distance to turbine T59 is 3,140 metres (bearing 93 degrees) **Viewpoint location:** E: 131162 N: 6428055 **Turbine dimensions:** 150m hub, 220m tip



Cross Section F17-1 – T59 location plan



Aerial view of F17-1 dwelling

Additional Information

Proposed mitigation

One turbine within 3km (T60) has been removed. Additional spot planting recommended. Neighbour Agreement has been offered.

Residual impacts

Existing trees surrounding and beyond dwelling F17-1 will provide some degree of screening and filtering of views toward turbines within the west and north west portion of the project. Additional spot planting beyond the dwelling would assist in screening/filtering views toward turbines in the south west portion of the project.

Visual significance

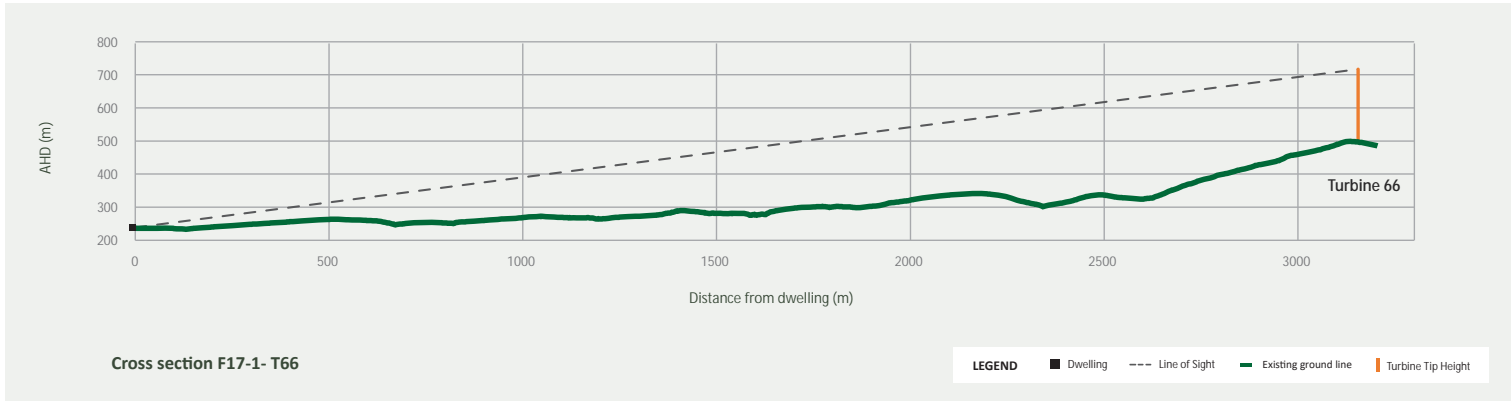
The wind farm would not result in a significant visual impact at dwelling F17-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

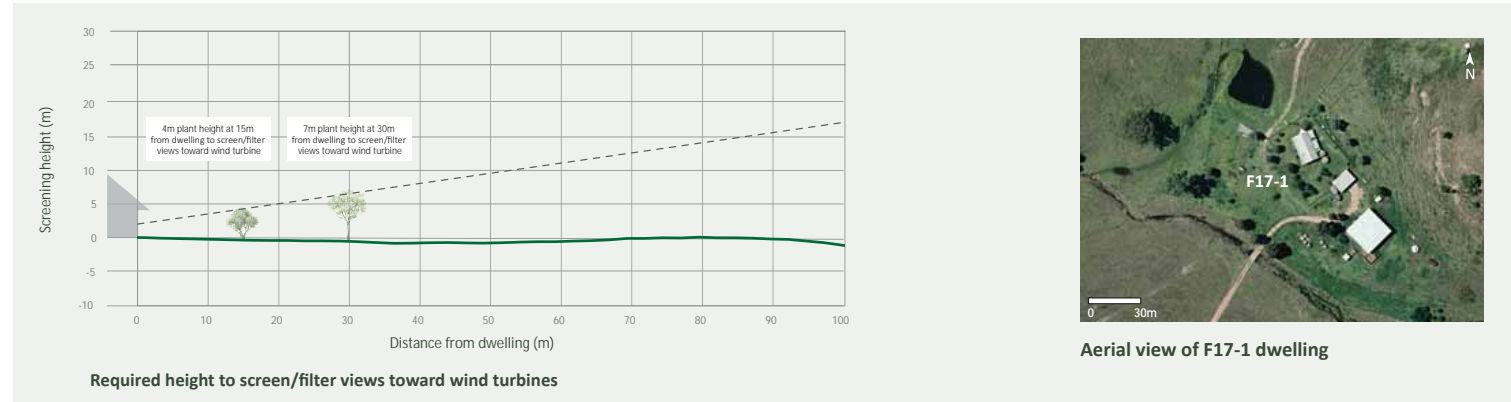
Bowmans Creek Wind Farm - additional information



Photomontage view from F17-1 Dwelling: Approximate distance to turbine T66 is 3,160 metres **Viewpoint location:** E: 131162 N: 6428055 **Turbine dimensions:** 150m hub, 220m tip



Cross Section F17-1 – T66 location plan



Aerial view of F17-1 dwelling

Additional Information

Proposed mitigation

One turbine within 3km (T60) has been removed. Additional spot planting recommended. Neighbour Agreement has been offered.

Residual impacts

Existing trees surrounding and beyond dwelling F17-1 will provide some degree of screening and filtering of views toward turbines within the west and north west portion of the project. Additional spot planting beyond the dwelling would assist in screening/filtering views toward turbines in the south west portion of the project.

Visual significance

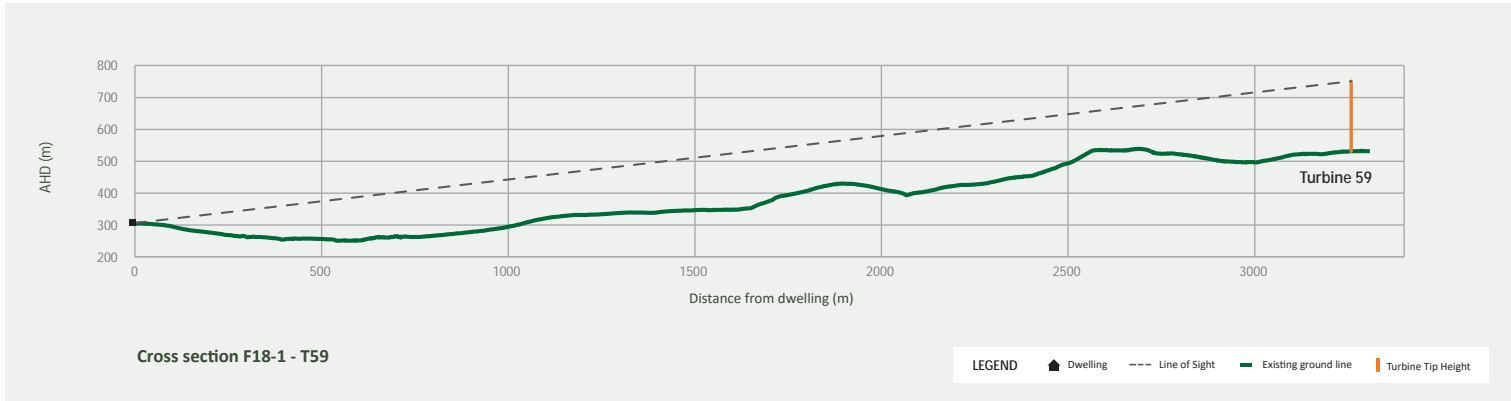
The wind farm would not result in a significant visual impact at dwelling F17-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

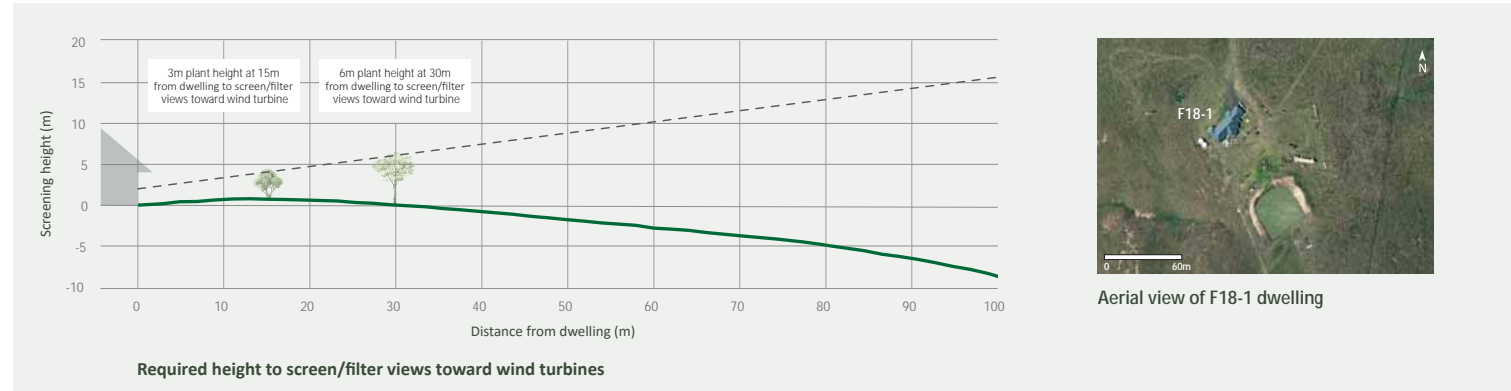
Bowmans Creek Wind Farm - additional information



Photomontage view from F18-1 Dwelling: Approximate distance to turbine T59 is 3,260 metres Viewpoint location: E: 131119 N: 6427300 Turbine dimensions: 150m hub, 220m tip



Cross Section F18-1 – T59 location plan



Aerial view of F18-1 dwelling

Additional Information

Proposed mitigation

One turbine within 3km (T65) was removed. Screen planting recommended. Neighbour Agreement has been offered.

Residual impacts

There is limited tree planting around the dwelling to screen views toward turbines which would be visually prominent on an elevated ridgeline east of the dwelling. A cross section analysis has determined that screen planting between 6m and 7m in height at 30m from the dwelling would provide effective screening toward wind turbines.

Visual significance

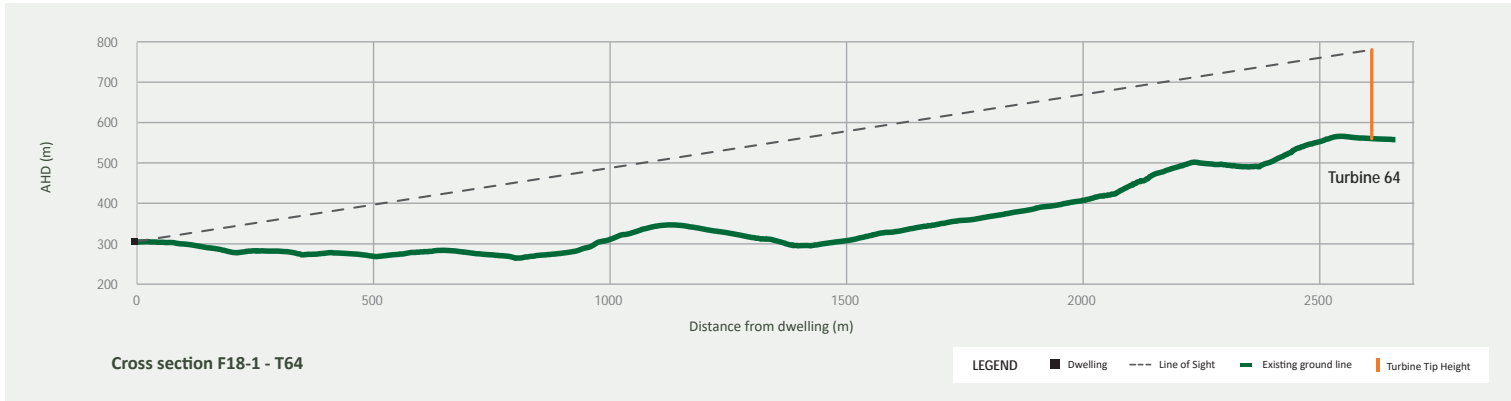
Without screening, the turbines would have potential to result in a significant visual impact at dwelling F18-1. With screening the wind turbines would not have a significant visual impact at dwelling F18-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

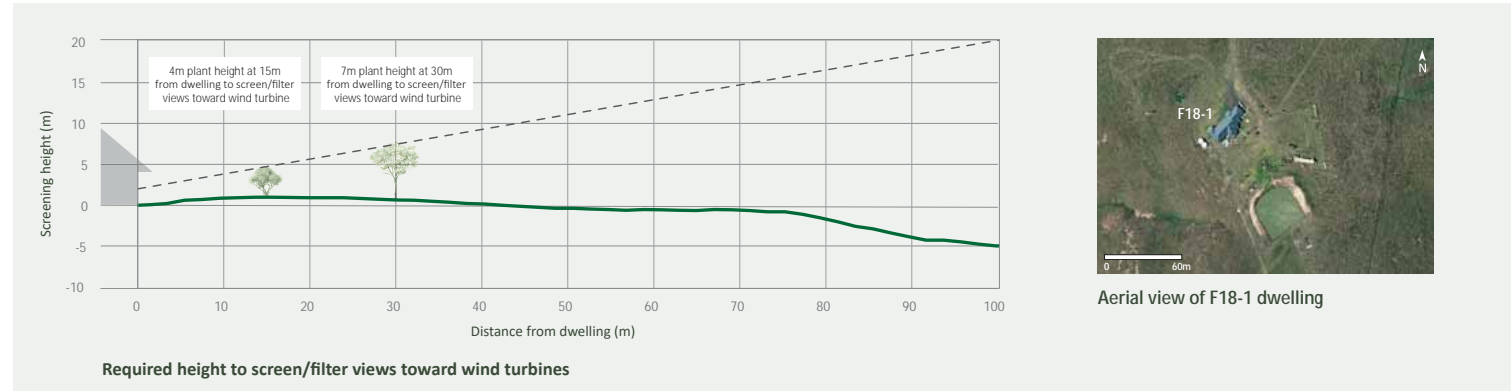
Bowmans Creek Wind Farm - additional information



Photomontage view from F18-1 Dwelling: Approximate distance to turbine T64 is 2,610 metres **Viewpoint location:** E: 131119 N: 6427300 **Turbine dimensions:** 150m hub, 220m tip



Cross Section F18-1 – T64 location plan



Aerial view of F18-1 dwelling

Additional Information

Proposed mitigation

One turbine within 3km (T65) was removed. Screen planting recommended. Neighbour Agreement has been offered.

Residual impacts

There is limited tree planting around the dwelling to screen views toward turbines which would be visually prominent on an elevated ridgeline east of the dwelling. A cross section analysis has determined that screen planting between 6m and 7m in height at 30m from the dwelling would provide effective screening toward wind turbines.

Visual significance

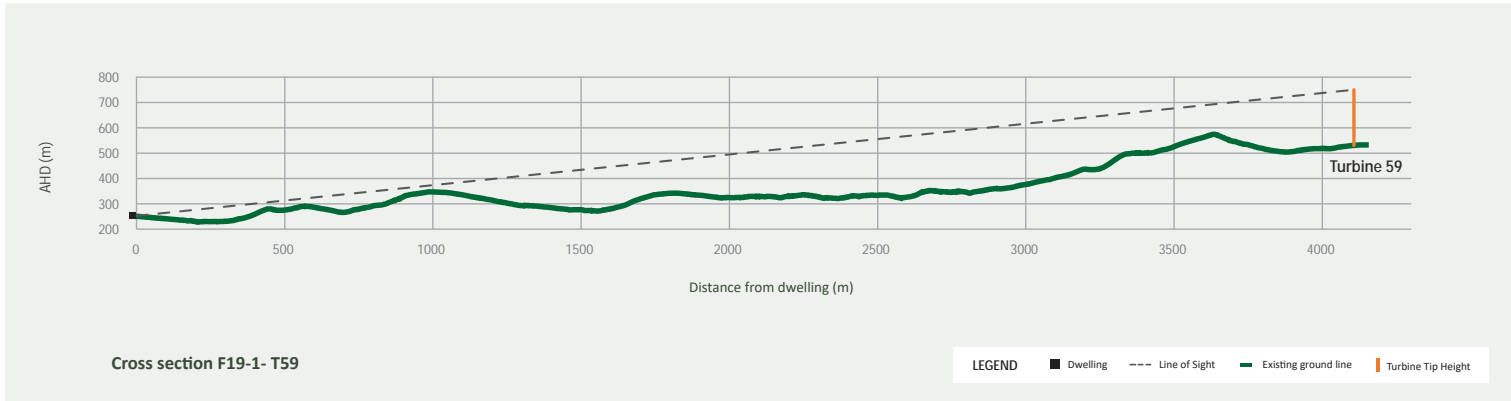
Without screening, the turbines would have potential to result in a significant visual impact at dwelling F18-1. With screening the wind turbines would not have a significant visual impact at dwelling F18-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

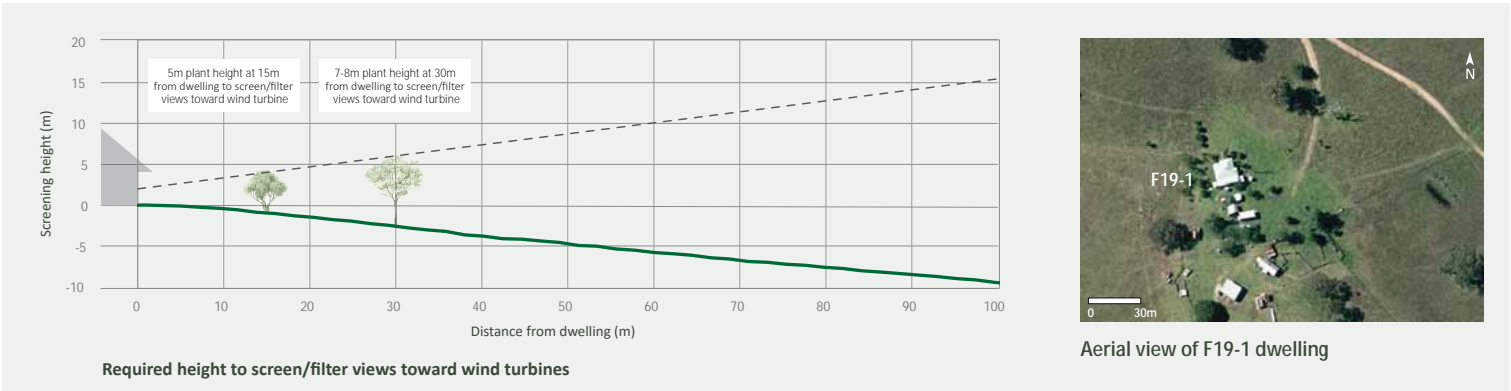
Bowmans Creek Wind Farm - additional information



Photomontage view from F19-1 Dwelling: Approximate distance to turbine T59 is 4,110 metres **Viewpoint location:** E: 312586 N: 6426237 **Turbine dimensions:** 150m hub, 220m tip



Cross Section F19-1– T59 location plan



Aerial view of F19-1 dwelling

Additional Information

Proposed mitigation
One turbine within 3km (T65) was removed. Screen planting recommended. Neighbour Agreement has been offered.

Residual impacts
The photomontage prepared for dwelling F19-1 illustrates direct and open views toward turbines on an elevated ridgeline east of dwelling F19-1. A cross section analysis has determined that screen planting between 7m and 8m in height at 30m from the dwelling would provide screening toward wind turbines.

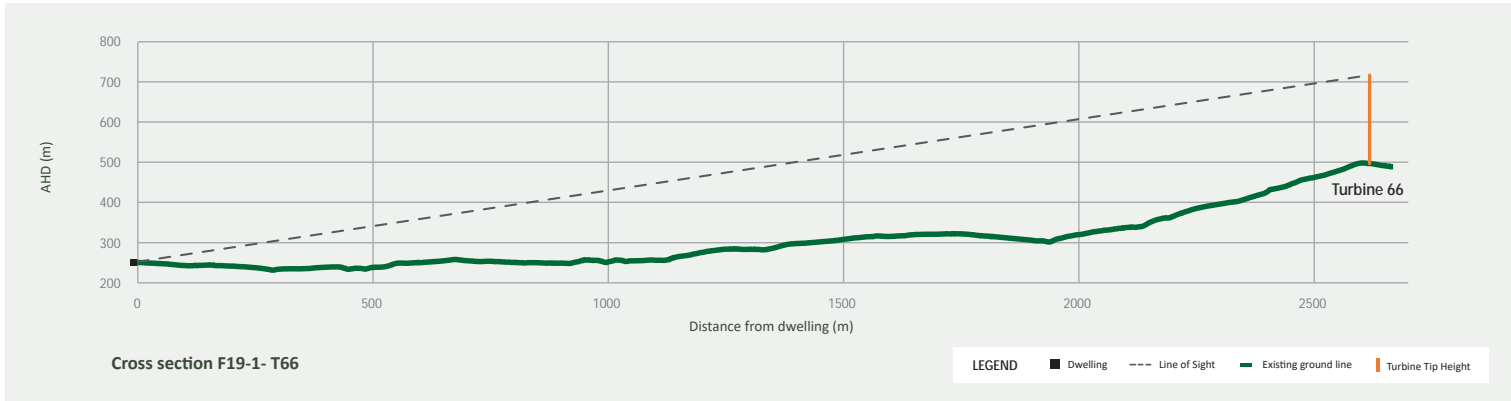
Visual significance
Without screening the turbines would have potential to result in a significant visual impact as dwelling F19-1. With screening the wind turbines would not have a significant visual impact at dwelling F19-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

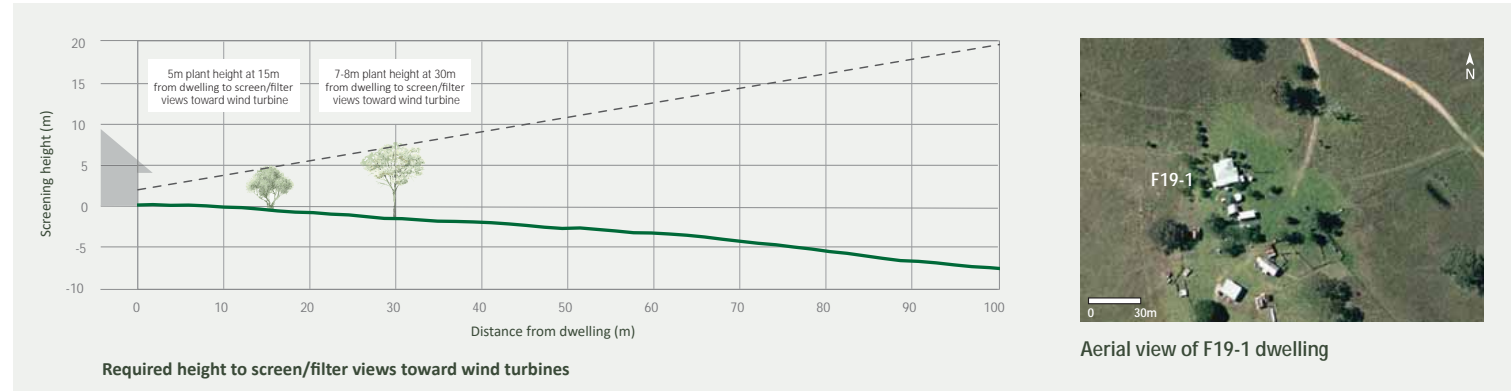
Bowmans Creek Wind Farm - additional information



Photomontage view from F19-1 Dwelling: Approximate distance to turbine T66 is 2,600 metres **Viewpoint location:** E: 312586 N: 6426237 **Turbine dimensions:** 150m hub, 220m tip



Cross Section F19-1– T66 location plan



Aerial view of F19-1 dwelling

Additional Information

Proposed mitigation

One turbine within 3km (T65) was removed. Screen planting recommended. Neighbour Agreement has been offered.

Residual impacts

The photomontage prepared for dwelling F19-1 illustrates direct and open views toward turbines on an elevated ridgeline east of dwelling F19-1. A cross section analysis has determined that screen planting between 7m and 8m in height at 30m from the dwelling would provide screening toward wind turbines.

Visual significance

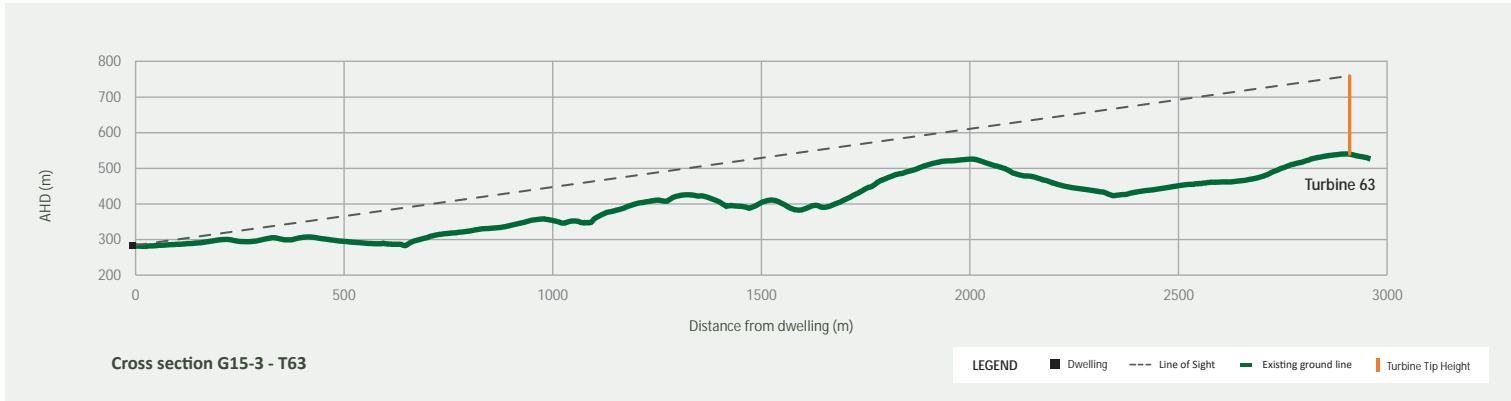
Without screening the turbines would have potential to result in a significant visual impact as dwelling F19-1. With screening the wind turbines would not have a significant visual impact at dwelling F19-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

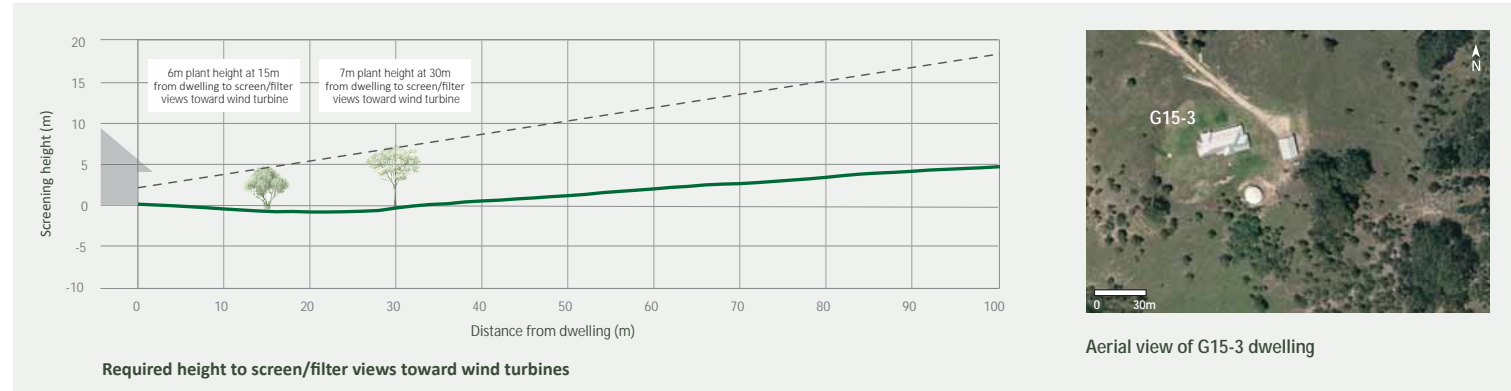
Bowmans Creek Wind Farm - additional information



Photomontage view from G15-3 Dwelling: Approximate distance to turbine T63 is 2,900 metres Viewpoint location: E: 313863 N: 6429643 Turbine dimensions: 150m hub, 220m tip



Cross Section G15-3 – T63 location plan



Aerial view of G15-3 dwelling

Additional Information

Proposed mitigation
Three turbines within 2km (T60, T61 and T62) were removed. Neighbour Agreement has been offered.

Residual impacts
Views toward wind turbines are largely screened by extensive tree cover beyond dwelling G15-3. Existing semi mature eucalypt trees screen significant views toward wind turbines. Screen planting is not considered necessary but would be made available if requested. A cross section analysis has determined that screen planting around 7m in height at 30m from the dwelling would provide screening toward wind turbines.

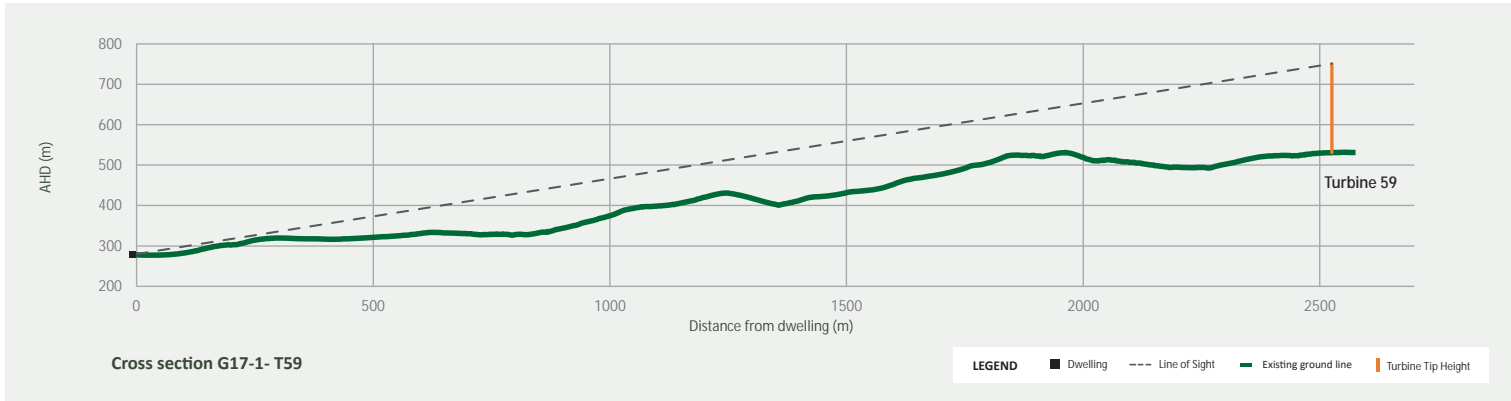
Visual significance
The wind farm would not result in a significant visual impact at dwelling G15-3.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

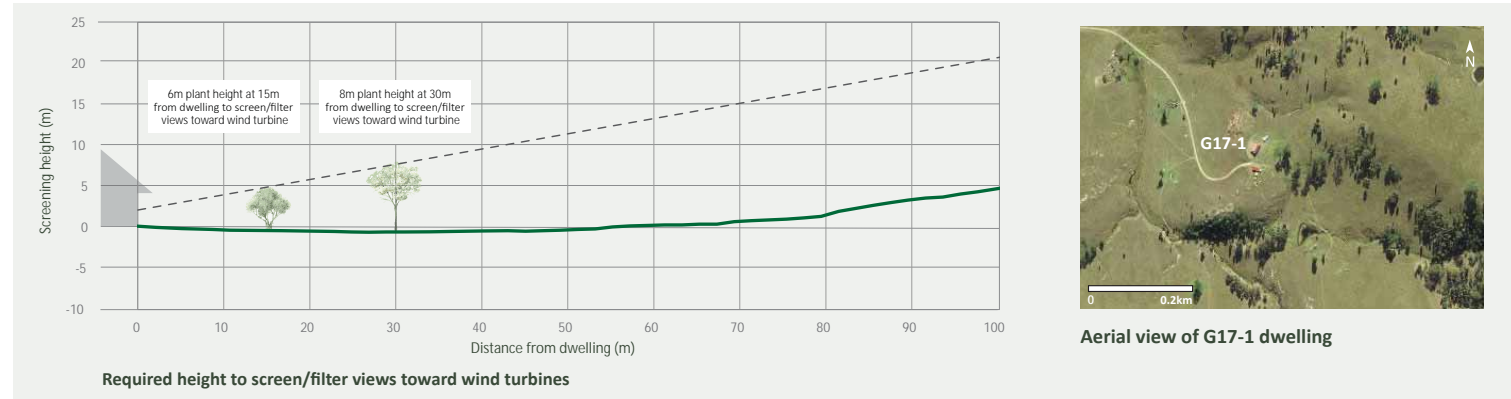
Bowmans Creek Wind Farm - additional information



Photomontage view from G17-1 Dwelling: Approximate distance to turbine T59 is 2,520 metres Viewpoint location: E: 313819 N: 6427578 Turbine dimensions: 150m hub, 220m tip



Cross Section G17-1 – T59 location plan



Aerial view of G17-1 dwelling

Additional Information

Proposed mitigation

Three turbines within 3km (T65, T61 and T62) were removed. Screen planting recommended. Neighbour Agreement has been offered.

Residual impacts

Photomontage prepared from dwelling G17-1 illustrates direct and open views toward 4 turbines on an elevated ridgeline east of dwelling G17-1. Existing mature eucalypt trees beyond the dwelling screen/filter views toward other turbines on the ridgeline. A cross section analysis has determined that screen planting between 7m to 8m in height at 30m from the dwelling would provide screening toward wind turbines.

Visual significance

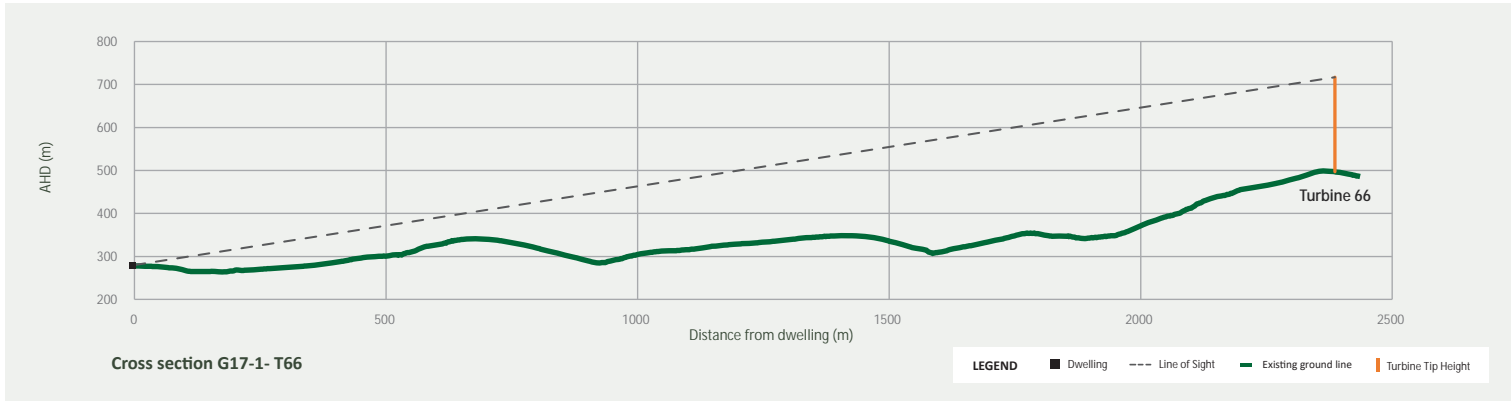
Without screening, the turbines would have potential to result in a significant visual impact at dwelling G17-1. With screening the wind turbines would not have a significant visual impact at dwelling G17-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

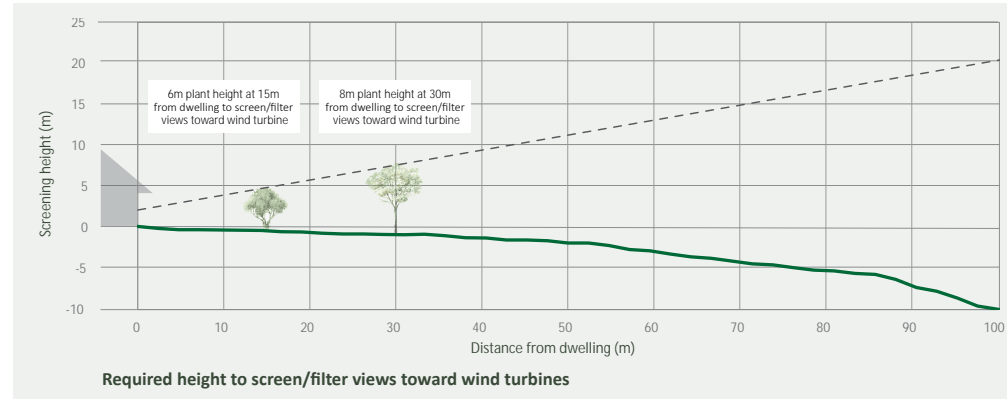
Bowmans Creek Wind Farm - additional information



Photomontage view from G17-1 Dwelling: Approximate distance to turbine T66 is 2,370 metres Viewpoint location: E: 313819 N: 6427578 Turbine dimensions: 150m hub, 220m tip



Cross Section G17-1 – T66 location plan



Aerial view of G17-1 dwelling

Additional Information

Proposed mitigation

Three turbines within 3km (T65, T61 and T62) were removed. Screen planting recommended. Neighbour Agreement has been offered.

Residual impacts

Photomontage prepared from dwelling G17-1 illustrates direct and open views toward 4 turbines on an elevated ridgeline east of dwelling G17-1. Existing mature eucalypt trees beyond the dwelling screen/filter views toward other turbines on the ridgeline. A cross section analysis has determined that screen planting between 7m to 8m in height at 30m from the dwelling would provide screening toward wind turbines.

Visual significance

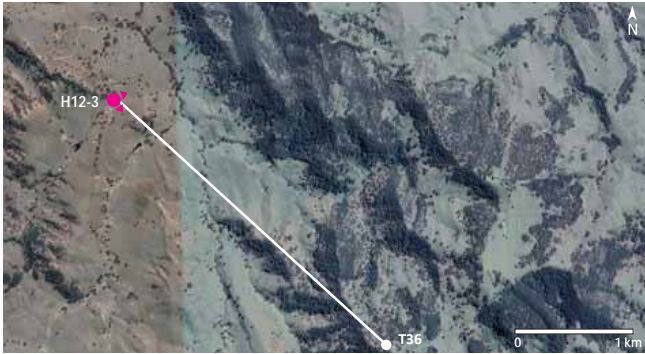
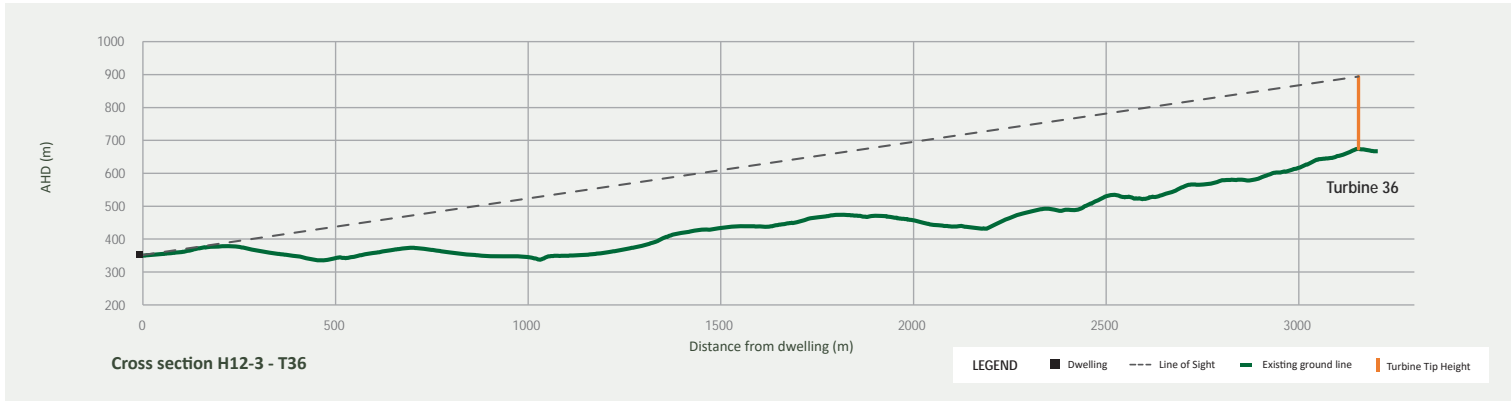
Without screening, the turbines would have potential to result in a significant visual impact at dwelling G17-1. With screening the wind turbines would not have a significant visual impact at dwelling G17-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

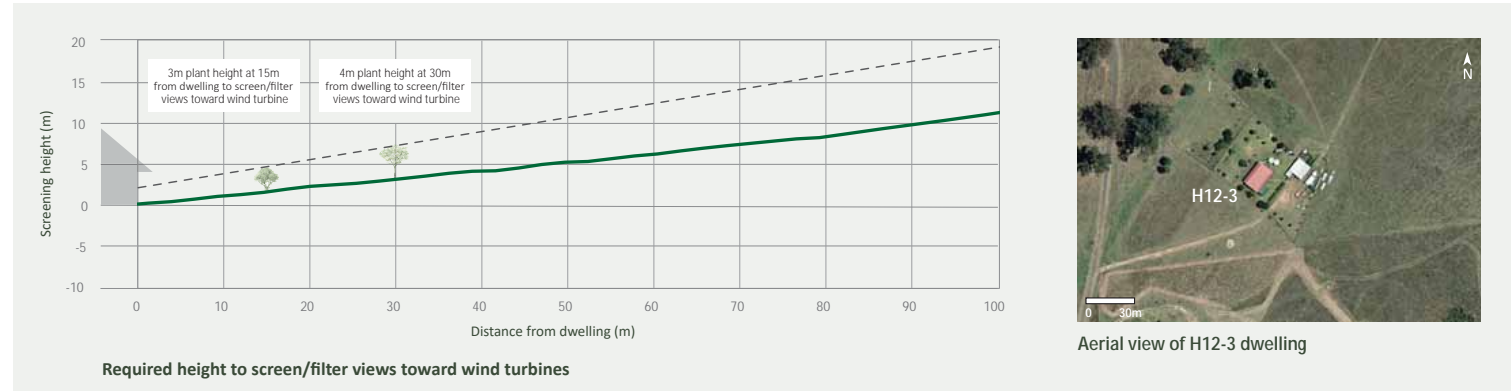
Bowmans Creek Wind Farm - additional information



Photomontage view from H12-3 Dwelling: Approximate distance to turbine T36 is 3,140 metres (bearing 133 degrees) **Viewpoint location:** E: 315282 N: 6433511 **Turbine dimensions:** 150m hub, 220m tip



Cross Section H12-3 – T36 location plan



Aerial view of H12-3 dwelling

Additional Information

Proposed mitigation

Four turbines (T56, T55, T53, T54) within 3km have been removed. Neighbour Agreement has been offered. Screen planting in accordance with the Bulletin.

Residual impacts

Views from the dwellings would extend toward a small number of turbines within the north west portion of the project site. A cross section analysis has determined that screen planting 4m in height at 30m from the dwelling would provide screening toward wind turbines.

Visual significance

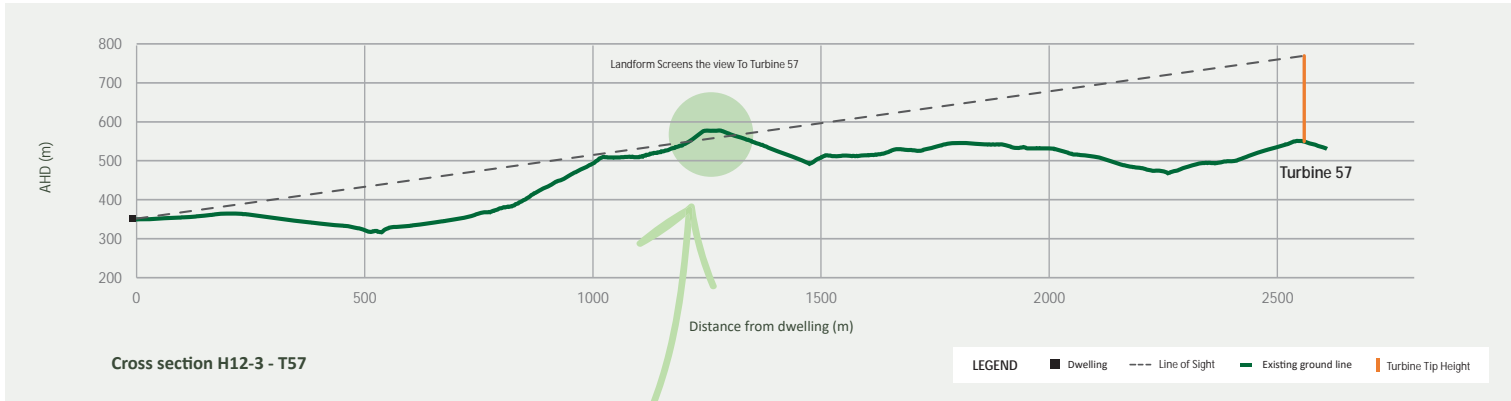
Without screening, the wind turbines would not result in a significant visual impact at dwelling H12-3, H12-2 and H11-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

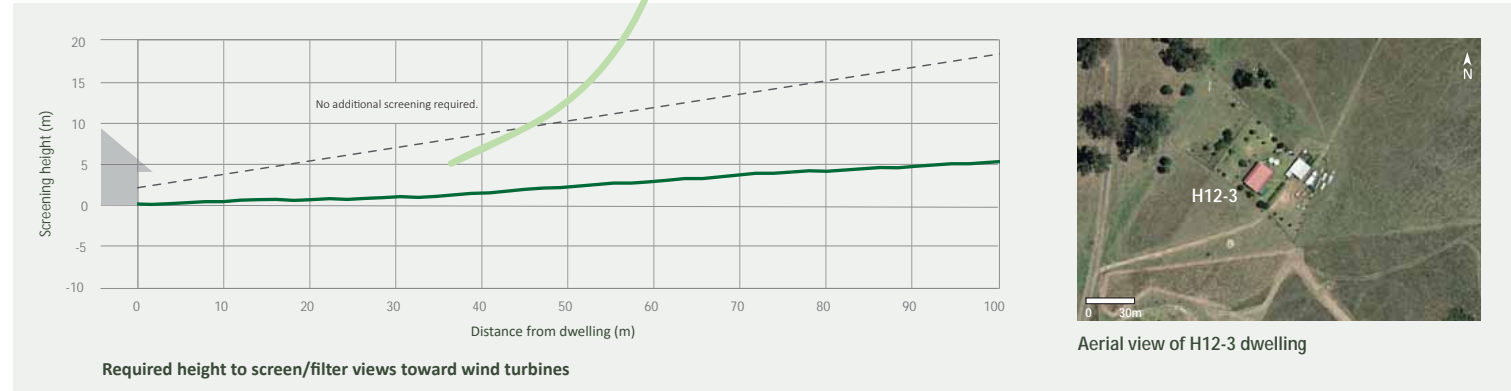
Bowmans Creek Wind Farm - additional information



Photomontage view from H12-3 Dwelling: Approximate distance to turbine T57 is 2,550 metres (bearing 76 degrees) **Viewpoint location:** E: 315282 N: 6433511 **Turbine dimensions:** 150m hub, 220m tip



Cross Section H12-3 – T57 location plan



Aerial view of H12-3 dwelling

Additional Information

Proposed mitigation

Four turbines (T56, T55, T53, T54) within 3km have been removed. Neighbour Agreement has been offered. Screen planting in accordance with the Bulletin.

Residual impacts

Views from the dwellings would extend toward a small number of turbines within the north west portion of the project site . A cross section analysis has determined that screen planting between 4m in height at 30m from the dwelling would provide screening toward wind turbines.

Visual significance

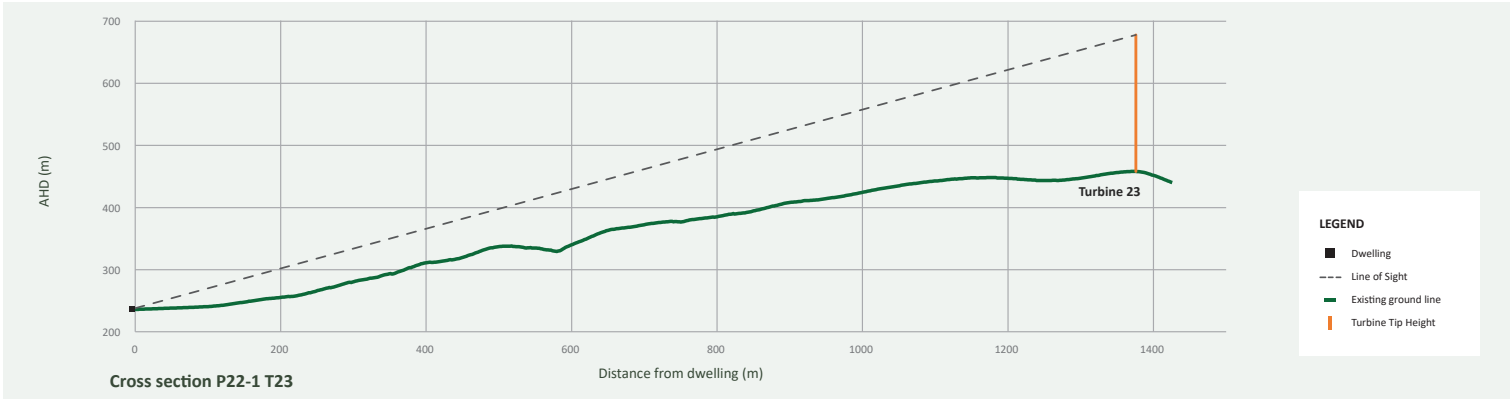
Without screening, the wind turbines would not result in a significant visual impact at dwelling H12-3, H12-2 and H11-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

Bowmans Creek Wind Farm - additional information



Photomontage view from P22-1 Dwelling: Approximate distance to turbine T23 is 1,340 metres Viewpoint location: E: 323098 N: 6422784 Turbine dimensions: 150m hub, 220m tip



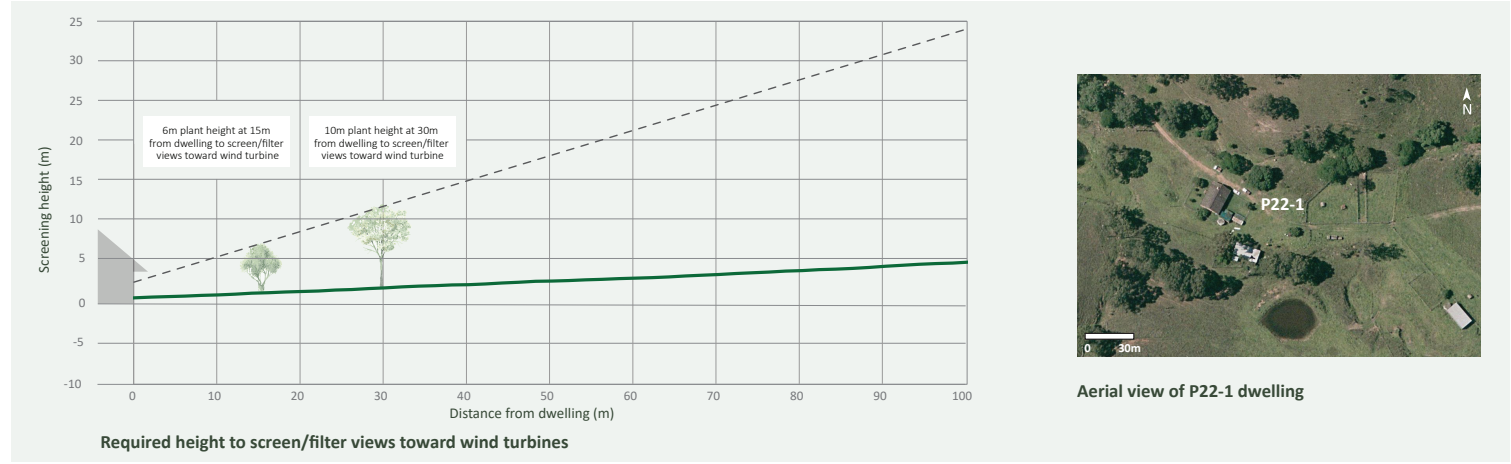
Cross Section P22-1– T23 location plan

Additional Information

Proposed mitigation: Neighbour Agreement has been offered. Screen planting is recommended.

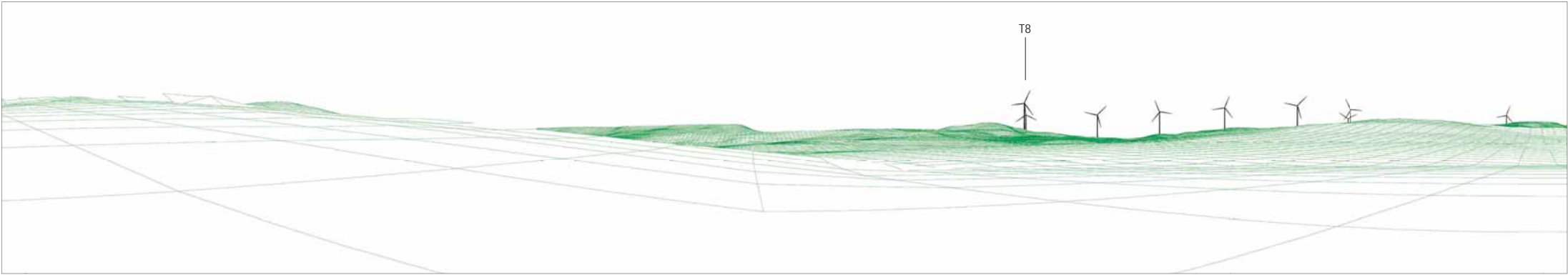
Residual impacts: The project is compliant with the Bulletin visual performance objectives for the VIZ 1 dwelling except visual magnitude. Photomontages prepared from dwellings P22-1 and P22-4 (within the same property) illustrate a combination of landform and tree cover that provides some degree of screening/filtering of views toward 4 wind turbines below the black line. There is a greater degree of tree screening/filtering toward wind turbines 24 and 25. No other wind turbines would be visible below the blue line. A cross section analysis has determined that screen planting 10m in height at 30m from the dwelling would provide screening toward wind turbines.

Visual significance: The project does not conform to the Bulletin magnitude performance objective, and without a neighbour agreement the removal of turbines 22 and 23 will mitigate visual impact in accordance with the Bulletin performance objectives (refer photomontages P22-1 and P22-4).

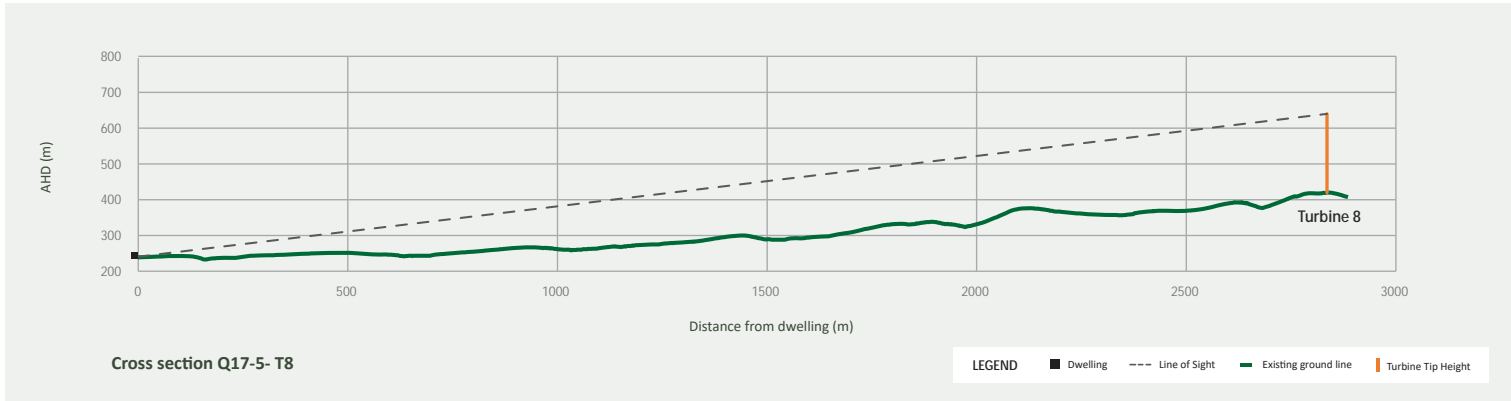


* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

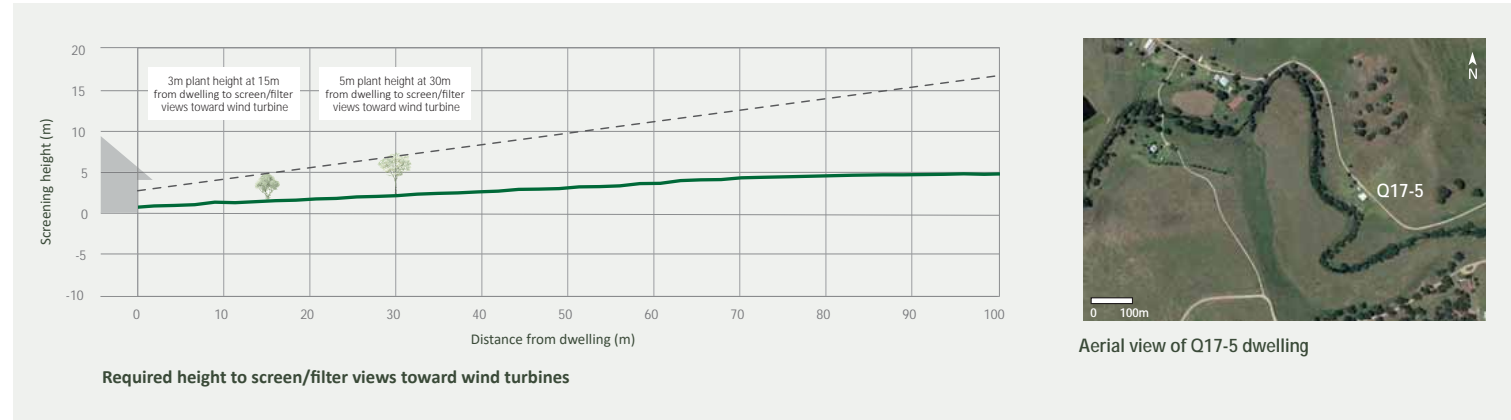
Bowmans Creek Wind Farm - additional information



Wireframe 180 degrees (05° - 185°) view from Q17-5 Dwelling: Approximate distance to turbine T8 is 2,850 metres **Viewpoint location:** E: 324213 N: 6427868 **Turbine dimensions:** 150m hub, 220m tip



Cross Section Q17-5 – T8 location plan



Aerial view of Q17-5 dwelling

Additional Information

Proposed mitigation

Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin.

Residual impacts

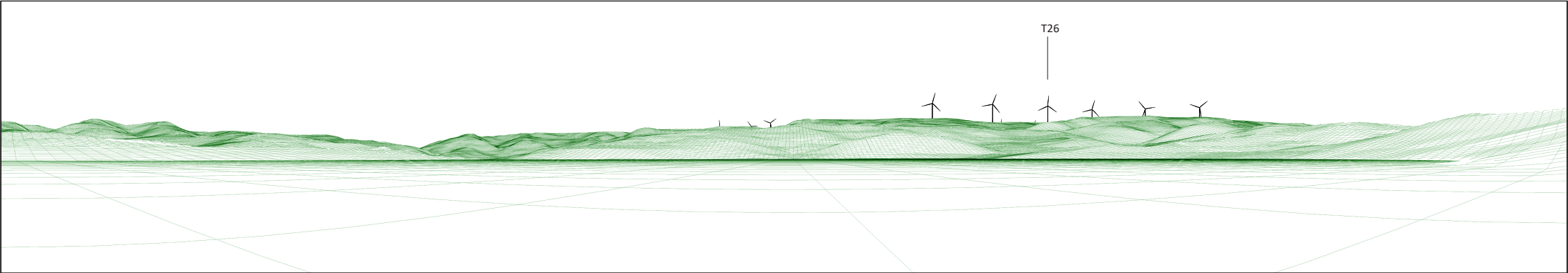
Additional tree planting to the dwelling curtilages would provide screening toward the wind turbines.

Visual significance

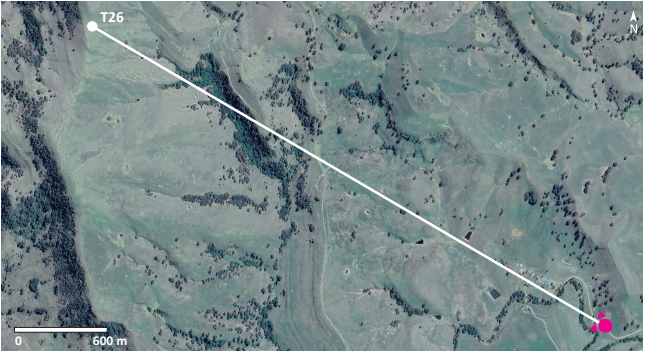
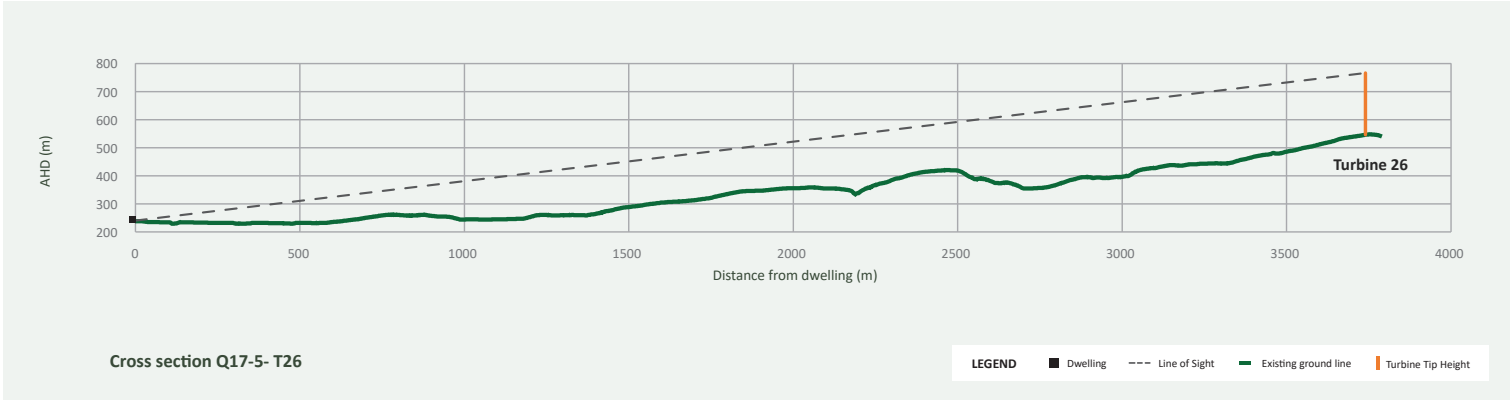
The wind farm would not have a significant impact on views from these dwellings.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

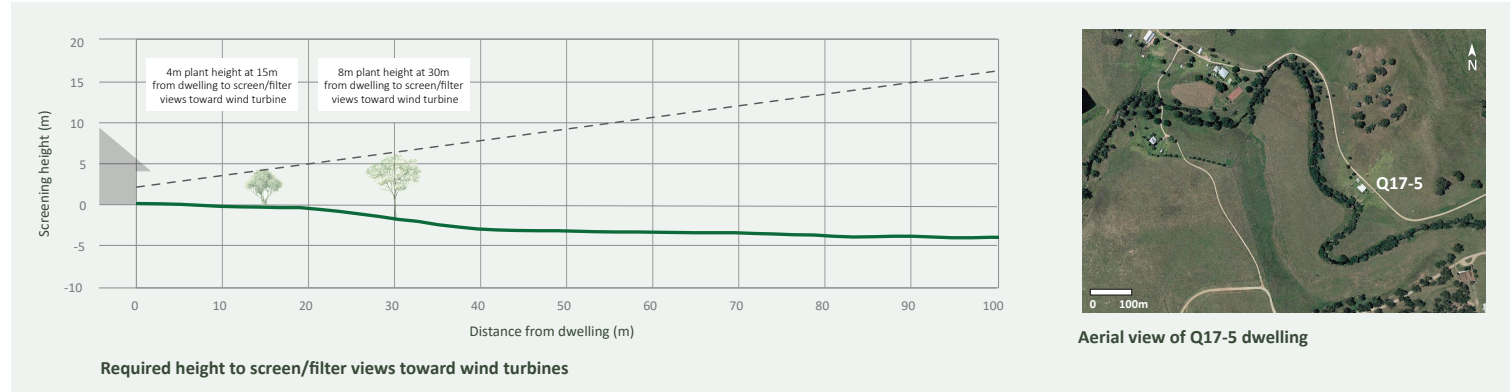
Bowmans Creek Wind Farm - additional information



Wireframe 180 degrees (180° - 360°) view from Q17-5 Dwelling: Approximate distance to turbine T26 is 3,620 metres Viewpoint location: E: 324213 N: 6427868 Turbine dimensions: 150m hub, 220m tip



Cross Section Q17-5 – T26 location plan



Aerial view of Q17-5 dwelling

Additional Information

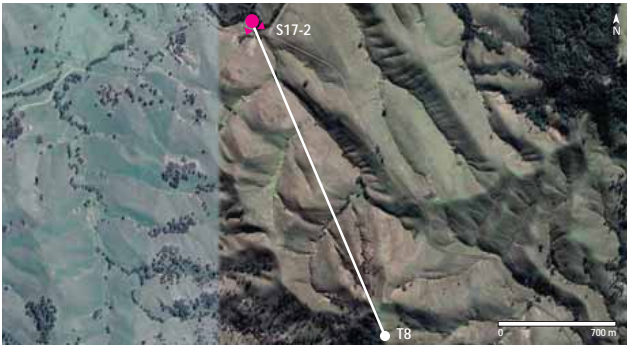
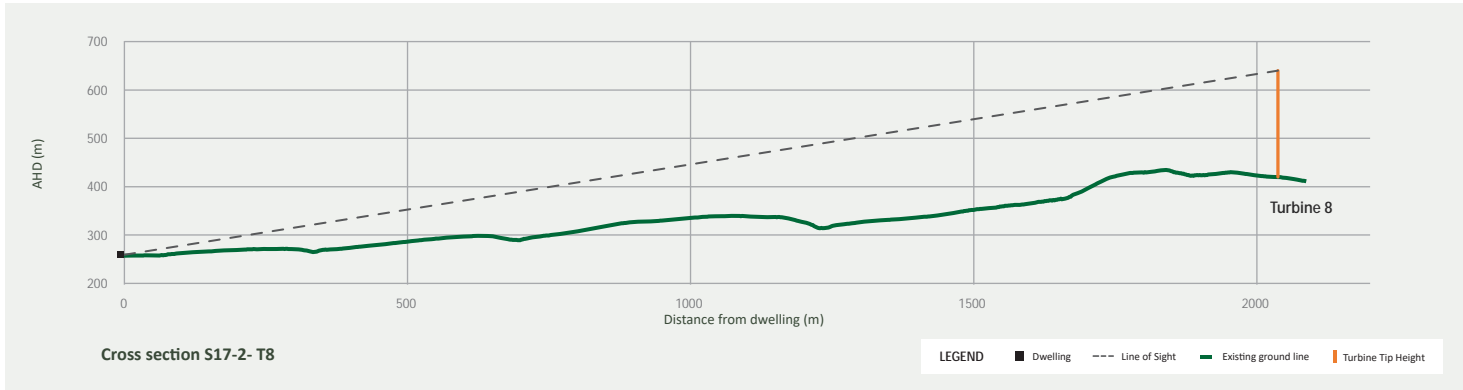
- Proposed mitigation**
Screening (between the blue line and the black line) will be offered to the landowner in accordance with the Bulletin.
- Residual impacts**
Additional tree planting to the dwelling curtilages would provide screening toward the wind turbines.
- Visual significance**
The wind farm would not have a significant impact on views from these dwellings.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

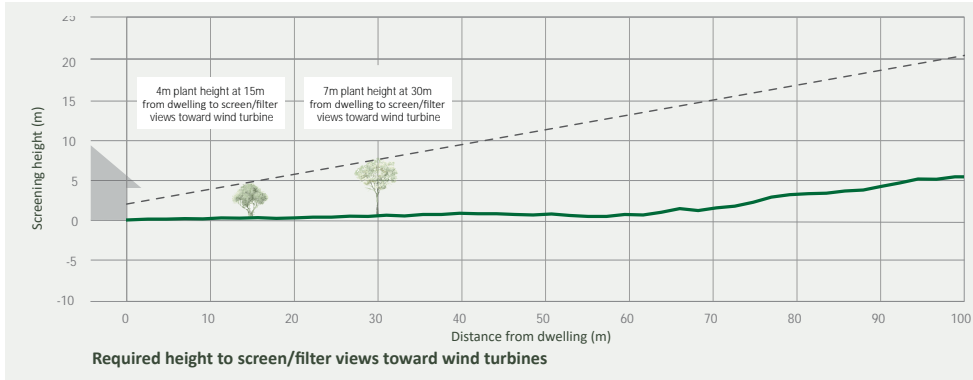
Bowmans Creek Wind Farm - additional information



Photomontage view from S17-2 Dwelling: Approximate distance to turbine T8 is 2,035metres **Viewpoint location:** E:325795 N:6428216 **Turbine dimensions:** 150m hub, 220m tip



Cross Section S17-2 – T8 location plan



Aerial view of S17-2 dwelling

Additional Information

Proposed mitigation: Five turbines (T2, T3, T11, T10, T9) within 3km have been removed Neighbour Agreement has been offered. Screen planting in accordance with the Bulletin

Residual impacts: The project is compliant with the Bulletin visual performance objectives for the VIZ 2 dwelling. Visual impacts have been managed through the removal of wind turbine T10 and relocation of turbines T8 and T9. Residual impacts including a view toward turbine T8 will be managed as far as practicable through screen planting in accordance with the Bulletin. A cross section analysis has determined that screen planting around 7m in height at 30m from the dwelling would provide screening toward T8.

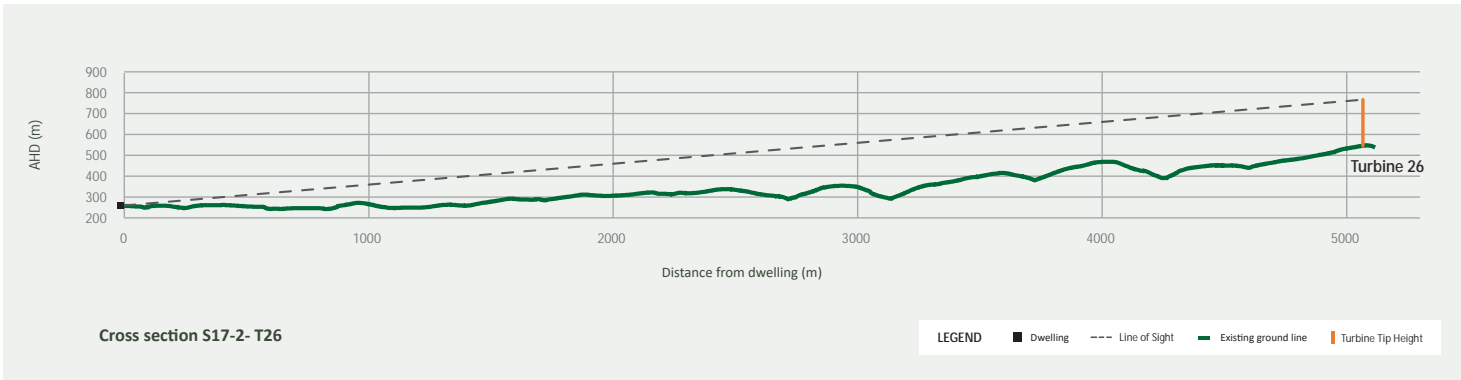
Visual significance: Without screening, the wind turbines would not result in a significant visual impact at dwelling S17-2.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

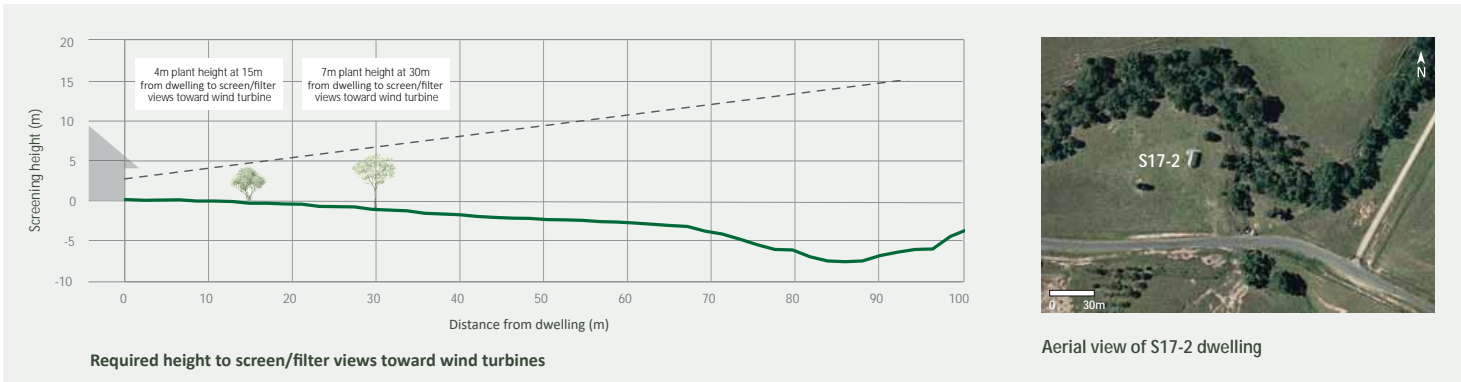
Bowmans Creek Wind Farm - additional information



Photomontage view from S17-2 Dwelling: Approximate distance to turbine T26 is 5,070 metres (bearing 288 degrees) Viewpoint location: E:325795 N:6428216 Turbine dimensions: 150m hub, 220m tip



Cross Section S17-2 – T26 location plan



Aerial view of S17-2 dwelling

Additional Information

Proposed mitigation: Five turbines (T2, T3, T11, T10, T9) within 3km have been removed Neighbour Agreement has been offered. Screen planting in accordance with the Bulletin

Residual impacts: The project is compliant with the Bulletin visual performance objectives for the VIZ 2 dwelling. Visual impacts have been managed through the removal of wind turbine T10 and relocation of turbines T8 and T9. Residual impacts including a view toward turbine T8 will be managed as far as practicable through screen planting in accordance with the Bulletin. A cross section analysis has determined that screen planting around 7m in height at 30m from the dwelling would provide screening toward T8.

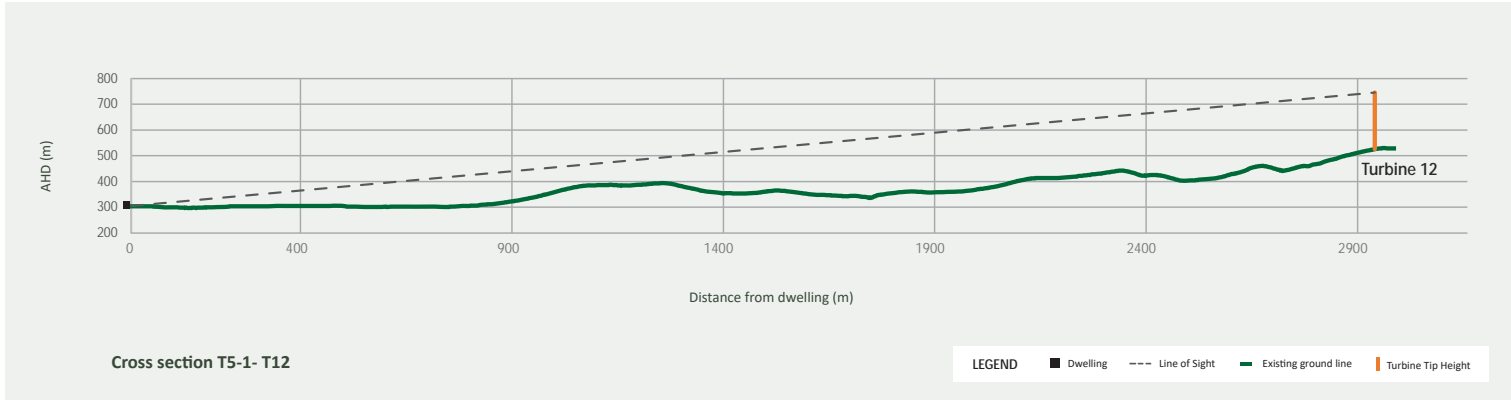
Visual significance: Without screening, the wind turbines would not result in a significant visual impact at dwelling S17-2.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

Bowmans Creek Wind Farm - additional information

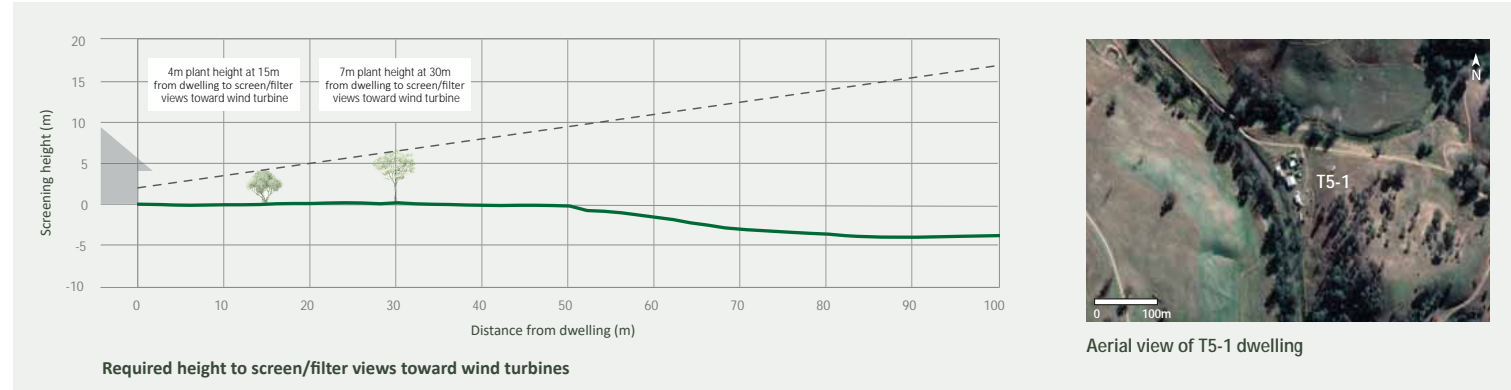


Photomontage view from T5-1 Dwelling: Approximate distance to turbine T12 is 2,940 metres **Viewpoint location:** E: 326359 N: 6440007 Turbine dimensions: 150m hub, 220m tip



Cross section T5-1- T12

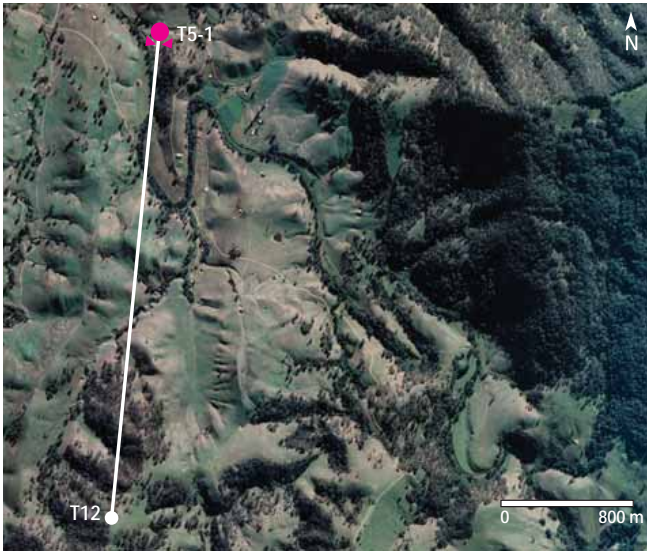
LEGEND ■ Dwelling --- Line of Sight — Existing ground line | Turbine Tip Height



Required height to screen/filter views toward wind turbines



Aerial view of T5-1 dwelling



Cross Section T5-1- T12 location plan

Additional Information

Proposed mitigation

Neighbour Agreement has been offered. Screen planting in accordance with the Bulletin

Residual impacts

The photomontage prepared for dwelling T5-1 illustrates some partial filtering of views toward turbines through existing (deciduous) tree planting beyond farm structures. Tree spot planting between the farm sheds and the dwelling would provide some degree of screening toward the turbines. A cross section analysis has determined that screen planting around 7m in height at 30m from the dwelling would provide screening toward wind turbines.

Visual significance

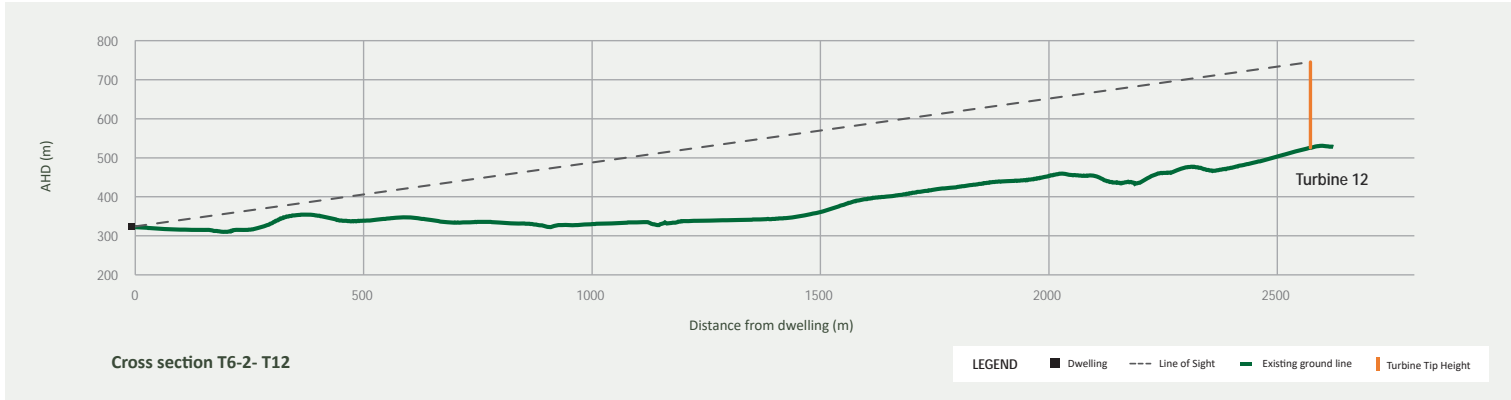
Without screening, the wind turbines would not have a significant visual impact at dwelling T5-1.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

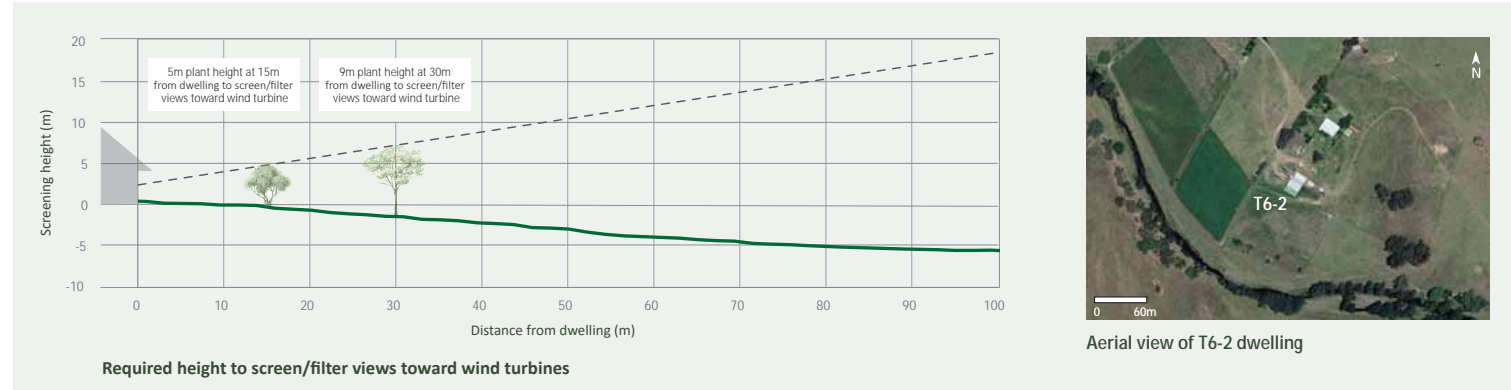
Bowmans Creek Wind Farm - additional information



Photomontage view from T6-2 Dwelling: Approximate distance to turbine T12 is 2,575 metres **Viewpoint location:** E: 326973 N: 6439512 **Turbine dimensions:** 150m hub, 220m tip



Cross Section T6-2– T12 location plan



Aerial view of T6-2 dwelling

Additional Information

Proposed mitigation: Neighbour Agreement has been offered. Screen planting in accordance with the Bulletin

Residual impacts: The photomontage prepared for dwelling T6-2 illustrates that a clustered group of turbines would be visible above an existing shed. Spot planting of trees between the farm shed and the dwelling would provide some degree of screening toward the turbines over time. However, tree planting may result in shading of solar panels on the shed, or upon the vegetable garden between the shed and dwelling. A cross section analysis has determined that screen planting around 9m in height at 30m from the dwelling would provide screening toward wind turbines.

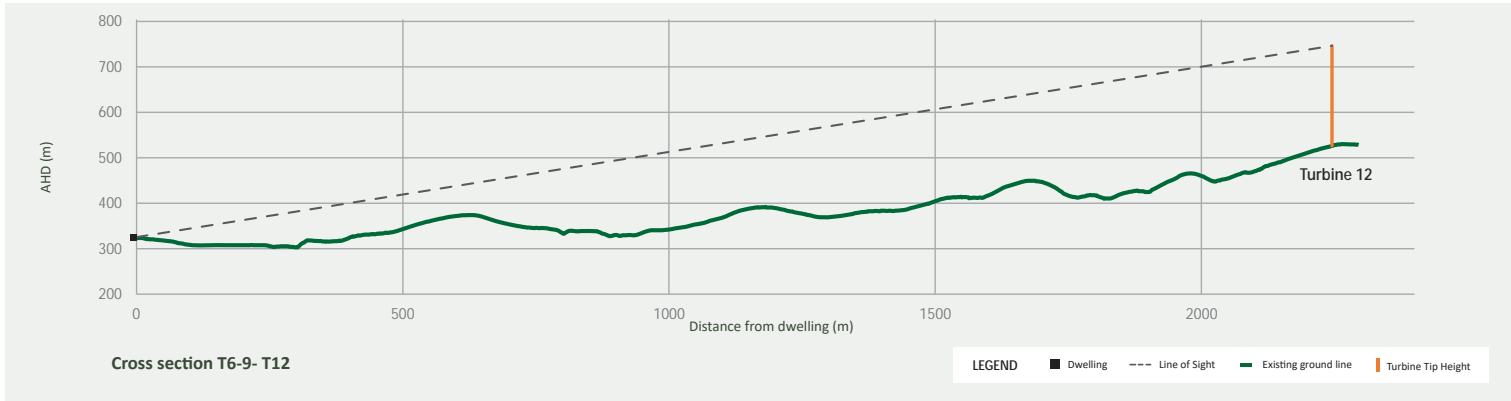
Visual significance: Without screening, the wind turbines would not result in a significant visual impact at dwelling T6-2.

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

Bowmans Creek Wind Farm - additional information



Photomontage view from T6-9 Dwelling: Approximate distance to turbine T12 is 2,240 metres Viewpoint location: E:326495 N:6439292 Turbine dimensions: 150m hub, 220m tip



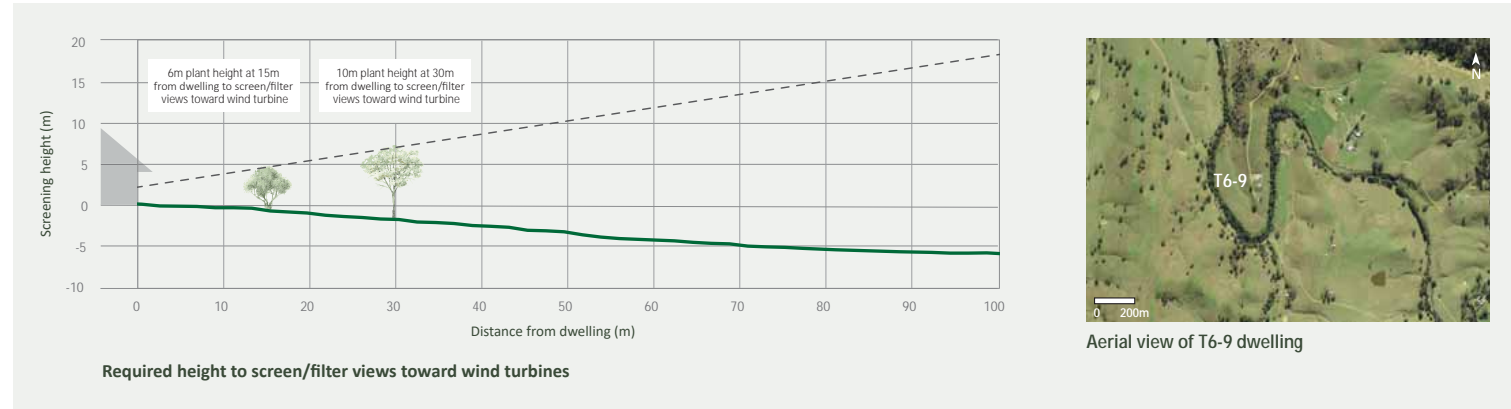
Cross Section T6-9 – T12 location plan

Additional Information

Proposed mitigation
Neighbour Agreement has been offered. Screen planting in accordance with the Bulletin

Residual impacts
The photomontage prepared for dwelling T6-9 illustrates views toward a small, clustered group of turbines within the northern portion of the project site. Tree spot planting beyond the dwelling would provide some degree of screening toward the turbines. A cross section analysis has determined that screen planting between 6m and 10m in height at 30m from the dwelling would provide screening toward wind turbines.

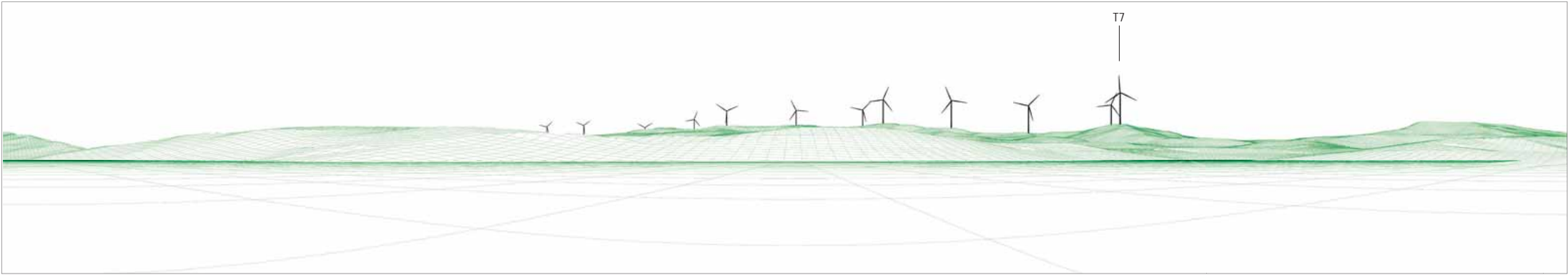
Visual significance
Without screening, the turbines would not result in a significant visual impact at dwelling T6-9.



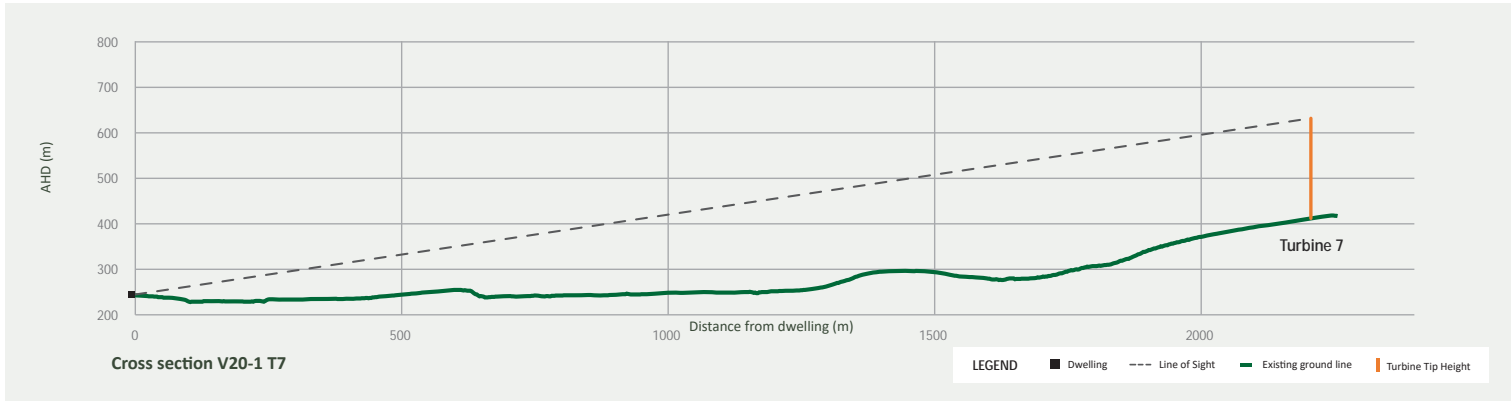
Aerial view of T6-9 dwelling

* Photomontage and wireframe provide a representation of the projects visibility for the purpose of discussion. The layout as shown may be subject to change in accordance with the planning process. The images provide a reasonable impression of wind turbine scale and distance to wind turbines; however they may not be 100% accurate. A static image cannot convey wind turbine blade movement, different lighting, weather and seasonal conditions that vary through time.

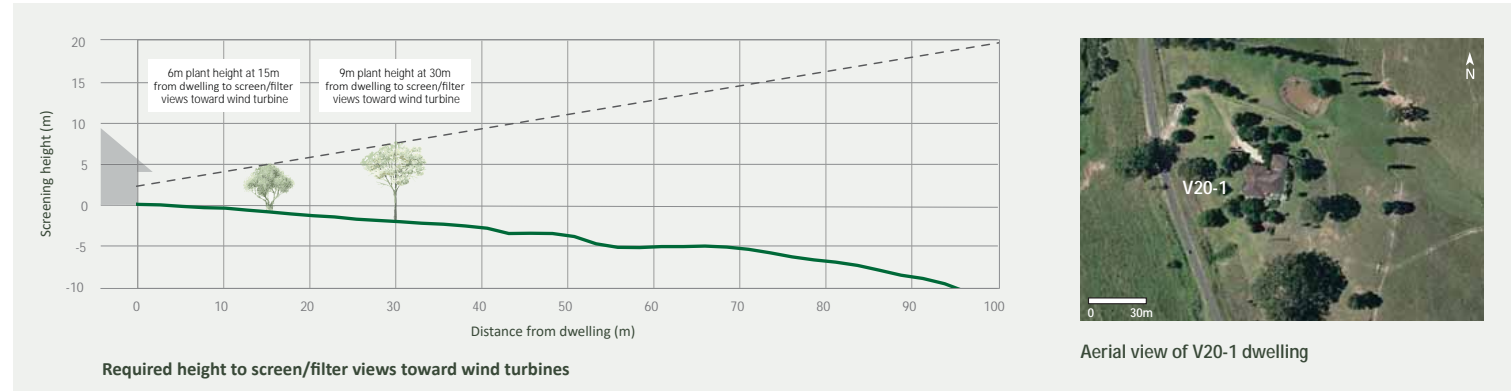
Bowmans Creek Wind Farm - additional information



Wireframe 180 degrees (180° - 360°) view from V20-1 Dwelling: Approximate distance to turbine T7 is 2,220 metres Viewpoint location: E: 328888 N: 6424696 Turbine dimensions: 150m hub, 220m tip



Cross Section V20-1 – T7 location plan



Aerial view of V20-1 dwelling

Additional Information

Proposed mitigation
Screen planting in accordance with the Bulletin

Residual impacts
Landform and tree cover beyond the dwelling will screen views toward most wind turbines from the dwelling and from various locations from the dwelling curtilage. A cross section analysis has determined that screen planting around 9m in height at 30m from the dwelling would provide screening toward wind turbines.

Visual significance
Without screening, the turbines would not result in a significant visual impact at dwelling V20-1.

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